Teaching in India Series

# The Teaching of GEOGRAPHY

E. A. Macnee

3177
16.2.73

910·7
Mac

Sixth Edition

This book was taken from the Library of Extension Services Department on the date last stamped. It is returnable within 7 days .

13.9.73.

25.9.73

25.3.74.

28.11.74

*Teaching in India Series,* III

# THE TEACHING OF GEOGRAPHY

The TEACHING IN INDIA SERIES includes many useful handbooks for teachers on a variety of subjects, and is designed to be used in training colleges and in teachers' libraries in schools. The following titles are available :

II. *The Teaching of English,* W. M. RYBURN. Eighth edition.

III. *The Teaching of Geography,* E. A. MACNEE. Sixth edition.

V. *The Organization of Schools,* W. M. RYBURN. Fourth edition.

VI. *The Teaching of History,* V. D. GHATE. Sixth edition.

VII. *The Teaching of English Spelling,* H. R. BHATIA. Third edition.

X. *The Teaching of Reading,* EMIL W. MENZEL, revised by P. N. Johnson. Third edition.

XI. *The Teaching of Science,* L. GHANSHAM DASS. Fifth edition.

XIV. *The Organization of Libraries,* S. R. RANGANATHAN. Third edition.

XV. *The Principles of Teaching,* W. M. RYBURN. Third edition.

XVI. *Introduction to Educational Psychology,* W. M. RYBURN. Second edition.

XVIII. *Play Way Suggestions,* W. M. RYBURN.

XX. *Social Studies in the School,* K. NESIAH. Third edition.

XXI. *The Visual Approach to Teaching,* T. L. GREEN. Second edition.

XXIV. *Aids and Tests in the Teaching of English as a Second Language,* W. R. P. SOMARATNE.

XXVI. *A History of Education in India and Pakistan,* F. E. KEAY & D. D. KARVE. Fourth edition.

XXVII. *Blackboard Work,* H. G. RAMSHAW, adapted by D. Horsburgh.

XXVIII. *The Teacher and his Pupils,* H. J. BYRNE, adapted by N. V. Manuel.

XXIX. *The Teaching of Mathematics,* E. J. JAMES, adapted by R. Narasimhachari. *In preparation.*

XXX. *Modern Indian Education,* T. N. SIQUEIRA. Second edition.

XXXI. *Education in Citizenship,* T. V. NILAKANTAM.

XXXII. *Principles of Education for Teachers in India,* E. B. CASTLE.

XXXIII. *Let the Children Grow,* PHYLLIS N. JOHNSON.

# THE TEACHING OF GEOGRAPHY

E. A. MACNEE, M.A., F.R.G.S.
*University of London Diploma in Geography*

*SIXTH EDITION*

910·7
Mac

INSTITUTE OF EDUCATION FOR WOMEN
3199
Dept. of Extension.
SERVICES
16.2.73
CALCUTTA-27

OXFORD UNIVERSITY PRESS
BOMBAY CALCUTTA MADRAS
1971

*Oxford University Press, Ely House, London W.1*
GLASGOW NEW YORK TORONTO MELBOURNE WELLINGTON
CAPE TOWN SALISBURY IBADAN NAIROBI DAR ES SALAAM LUSAKA ADDIS ABABA
BOMBAY CALCUTTA MADRAS KARACHI LAHORE DACCA
KUALA LUMPUR SINGAPORE HONG KONG TOKYO
*Oxford House, Apollo Bunder, Bombay 1 BR*

© Sixth edition Oxford University Press, 1971

*First edition* 1933
*Second edition* 1939
*Third edition* 1951
*Fourth edition* 1956
*Fifth edition* 1962
*Sixth edition* 1971

PRINTED IN INDIA BY S. R. KRISHNAN AT INLAND PRINTERS, VICTORIA MILLS BUILDINGS, 55 GAMDEVI ROAD, BOMBAY 7 AND PUBLISHED BY JOHN BROWN, OXFORD UNIVERSITY PRESS, APOLLO BUNDER, BOMBAY 1 BR

## PREFACE TO THE FIRST EDITION

This little book has been written, first, to help teachers in Indian secondary schools to understand the scope and appreciate the value of Geography and, secondly, to give them some practical assistance in teaching the subject.

I have derived inspiration from a large number of books, the names of which I have endeavoured to include in the appendix. I am specially indebted to the works of Dr L. D. Stamp, to *Geography in School* by J. Fairgrieve and to *The Scope of School Geography* by R. N. R. Brown, O. J. R. Howarth and J. McFarlane.

E. A. M.

## PUBLISHER'S NOTE

*To the Sixth Edition*

E. A. Macnee's original *Suggestions for the Teaching of Geography in India* was prepared while the author was Principal of the Spence Training College, Jabalpur. The third edition was substantially enlarged and revised by Miss Eva D. Birdseye, and the work was then issued under its present title.

For the preparation of this new edition the publishers gratefully acknowledge the help of Smt. A. Parthasarathi in bringing much of the material up to date.

# PLACE NAMES

Since this book was first published, many of the Indian place names referred to have been changed. In this edition the new names have been given in the text but, for reasons of economy, have remained unchanged in the maps.

Here is a list of the principal recurring names with their old and new versions.

R. Ganges = Ganga
Jubbulpore = Jabalpur
R. Jamna = Jamuna
R. Kistna = Krishna
Madras State = Tamil Nadu
R. Narbada = Narmada
Trichinopoly = Tiruchirapalli
Vizagapatam = Vishakhapatnam

## CONTENTS

I. Definition and Function ... ... 1
II. Physical Factors ... ... ... 4
III. Biological Factors ... ... ... 16
IV. Human Geography ... ... ... 23
V. The Regional Method ... ... 40
VI. The Comparative Method ... ... 51
VII. Learning from Maps ... ... ... 58
VIII. The Geography Room and Apparatus ... 72
IX. Individual Work ... ... ... 80
X. Learning from Pictures ... ... 88
XI. Oral Lessons ... ... ... 123
XII. Tests and Examinations ... ... 144
XIII. Geographical Excursions ... ... 157
Appendix : Some Useful Books on Geography ... 168
Index ... ... ... ... ... 185

## LIST OF PLATES

*Between pp.* 104 *and* 105

I. The Himalayas seen from Leh, Ladakh
II. The Lauterbrunnen Valley
III*a*. Loch Fyne, Argyllshire
III*b*. The Welsh Uplands
IV*a*. Mount Fuji
IV*b*. A Ceylon Tea Estate

V*a*. Shooting the Rapids in Japan
V*b*. The Rhine Gorge
VI*a*. Srinagar
VI*b*. Canton
VII. The Jordan Valley
VIII*a*. The Cornish Coast
VIII*b*. The Geiranger Fjord
IX*a*. Eskimos
IX*b*. An Arctic Mining Centre
X. Vintage Time in an Italian Vineyard
XI*a*. Mountain and Pasture in New Zealand
XI*b*. Changing U.S.S.R.
XII. Paddy Fields in China
XIII*a*. A Lumber Camp
XIII*b*. A Paper Mill
XIV*a*. Shipbuilding
XIV*b*. Rubber Plantation
XV*a*. The Colorado Plateau
XV*b*. Boulder Dam
XVI*a*. Paris from the Air
XVI*b*. Haifa

Figures in the text numbered 1 to 25 are to be found on pp. 7, 8, 9, 10, 25, 26, 27, 28, 30, 31, 33, 35, 36, 46, 48, 56, 64 (two), 68, 73, 91, 133, and 135, and between pp. 154 and 155.

OF EDUCATION
Dept. of Extens
SERVICES
INSTITUTE
CALCUTTA

# I

# DEFINITION AND FUNCTION

GEOGRAPHY means literally a description of the earth. But ‘ the world is so full of a number of things ’ that it would be hopeless to attempt to describe every part of the earth in detail. What then are we to describe and what may we safely omit ? We must have some principle to guide us. The principle suggests itself when we consider why we study the earth. We study it chiefly because we live on it. So, to give a more explicit definition, geography is the study of the earth as the home of man ; or, in other words, geography is the study of the environment of man, physical and social, particularly in its relation to human activities.

All parts of the earth's surface are not equally important for human beings. A description of the densely populated Nile Valley, for example, is of much greater human interest than a description of an equal area in the centre of the Sahara Desert. Similarly, a description of the British Isles is more important than a description of sparsely populated Labrador in the same latitude. The factors in our physical environment which have a definite influence on human life are more important in geography than those which have little or no influence.

Barker in *Geography in Education and Citizenship* favours the definition of geography as the adjustment of human groups to their physical environment. The definition is valuable because it emphasizes the human side of geography and the influence of the physical environment on human life. If not fully understood, however, it seems rather to convey the impression that the whole of man's physical environment is fixed and unalterable and that man has to adapt himself to it as best as he can and so makes man appear too passive in his reaction to his physical environment.

Now it is perfectly true that the natural physical environment has a great effect on human life. In hot and wet plains, for example, men grow rice for food and along sea coasts they catch fish. But this is not the whole truth. The converse is also true. In many parts of the world man has had a considerable effect on his environment. By digging canals he has converted deserts into fruitful fields and he has covered thousands of square miles of the earth's surface with houses, roads, railways and factories. Perhaps, then, we can best define geography as a study of the interaction between man and his environment. We study man and the place he lives in and the relations between the two.

The function of geography teaching in school is well stated by Fairgrieve in *Geography in School.* 'The function of geography is to train future citizens to imagine accurately the conditions of the great world stage and so to help them to think sanely about political and social problems in the world around.' In these democratic days every man should think out political problems for himself and not blindly follow the demagogues who shout the loudest. Similarly every man should be able to form intelligent opinions for himself about social problems and not accept customs as perfect or necessary merely because they have been handed down from past generations.

To understand the function of geography more clearly, let us imagine a man who has never left his native village and has never heard or read about the world outside his village. Could such a man with his limited mental horizon be expected to hold sensible views about questions affecting the whole of India ? If he visited other villages and towns in his neighbourhood, his outlook would be broadened ; if he travelled to different parts of India it would be broader still ; if he travelled to other countries outside India, it would be still broader. But all men are not in a position to travel widely and no one can travel to every part of the world. This is where geography comes in and performs a valuable function. If we cannot ourselves go and see other parts of the world, we can at any rate inform ourselves about them from books, pictures and descriptions.

Travel is a great educator. Geography enables those who cannot themselves travel everywhere to visualize conditions existing in different parts of the world. Just as travel broadens the outlook, so does a study of geography. But a word of warning is necessary. Travellers obtain varying degrees of benefit from their travels according to the amount of attention they pay to their surroundings and the intelligence with which they draw inferences from their observations. So also the benefits to be derived from a study of geography depend largely on the way in which it is studied.

## II

## PHYSICAL FACTORS

Most subjects of the school curriculum can be classed as either scientific or human. Physics, chemistry and mathematics are examples of sciences; history and languages of human subjects. Geography has a unique place, being both a scientific and a human subject. On the scientific side geography is related to both physical and biological sciences, the chief physical sciences to which it is related being astronomy, meteorology, geology and oceanography. It is not possible in a single chapter to deal exhaustively with this relation, but an attempt is made below to indicate some of the main topics that are common to geography and the physical sciences and to give some hints for teaching them. Many of the topics can best be taught with the aid of diagrams.

Astronomy studies the heavenly bodies, of which the earth is one. The form and movements of the earth, the inclination of its axis, day and night, the seasons, latitude and longitude, time—these are parts of the science of astronomy and also an integral part of geography. In teaching the astronomical part of geography a good globe is essential and an orrery desirable. A good lesson on day and night can be given by reflecting sunlight from a mirror outside the classroom on to a globe inside (see p. 77). A lesson on the seasons can be illustrated by making a lamp represent the sun and a globe the earth. Elementary ideas about latitude and longitude can be given by asking pupils to describe the position of a point on an ordinary blackboard and then that of a point on a squared blackboard. They will find it much easier to locate a point on the squared blackboard. The horizontal lines on the squared blackboard may be compared to lines of latitude and the vertical lines to lines of longitude.

Meteorology is the science which deals with weather and includes the study of atmospheric pressure and temperature, the winds, precipitation, cloudiness, and sunshine. Climate may be defined as average weather, but is studied over a longer period of time and a more extensive area than is weather. Climate has an obvious influence on human life in different parts of the world, e.g. on food, clothing, housing, and occupations. In particular, climate exercises its influence through natural vegetation and the limits it imposes on crops and on man's ability to live in certain places. The three chief factors in climate are temperature, pressure and rainfall. A practical understanding of these factors can be obtained by observation of the instruments that record them, i.e. the thermometer, the barometer and the rain gauge. These observations should begin in a very simple way in the junior school. Wind directions, sunny, rainy and cloudy days can all be recorded on class charts as early as the second or third school year. These charts can be kept and used as the basis of future lessons on the climate of the home region. Later, records of actual temperature and rainfall can be made and individual charts drawn. These should be used as the foundation for the lessons on the climate of other countries. Higher up the school, records of pressure can be kept, but these are not so useful as the others, and can be omitted if time is limited.

It is essential to all real understanding of the climate of other parts of the world that a child's geographical concepts should be based on actual experience of the climate of his home region. If this is done there should be less difficulty in teaching the climate of any country. Care, however, should be taken not to use geographical terms loosely, e.g. Summer and Winter in those parts of India where Hot Season and Cool Season would be more applicable.

A study of the distribution of temperature over the surface of the earth leads to the generalization that temperature decreases with distance from the equator. If, in the junior school, stories of children of other lands form part of the syllabus this idea can be introduced easily. The connexion of this decrease with the greater obliquity of the sun's rays as one proceeds away from the equator should be noted at a later stage in the school curriculum. Another factor influencing temperature is altitude. Pupils often find it difficult to understand why it gets colder as one goes upward closer to the sun. They should understand that the heat of the air around us is due chiefly to radiated heat from the surface of the earth which has been heated by the sun's rays. In high altitudes where atmosphere is more rare this radiated heat escapes more quickly. A third factor is the sea, which exercises a moderating influence, places near the sea having an equable climate if the prevailing winds are onshore (*N.B.* New York which is on the coast does not have an equable climate). The study of the effect of these last two factors can most easily be introduced in connexion with the climate of different parts of India, and can readily be understood by pupils as soon as they can draw a temperature chart. Comparison of the average temperature chart of Calcutta and Darjeeling will make clear the effect of altitude and that of Calcutta and Delhi will show the difference made by distance from the sea. A good deal of time can profitably be given to this type of exercise in the middle school and a foundation thus laid for all climatic work required in the upper school where time is usually more precious. It should be noted that pupils can appreciate the meaning of this type of diagram long before they learn to draw graphs in the mathematics class.

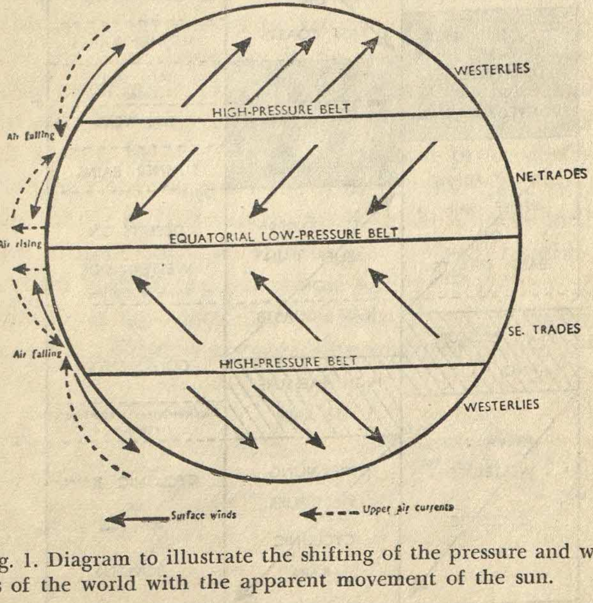


Fig. 1. Diagram to illustrate the shifting of the pressure and wind belts of the world with the apparent movement of the sun.

Air pressure is important chiefly in connexion with winds. The fundamental law that air moves from areas of high pressure to areas of low pressure is readily

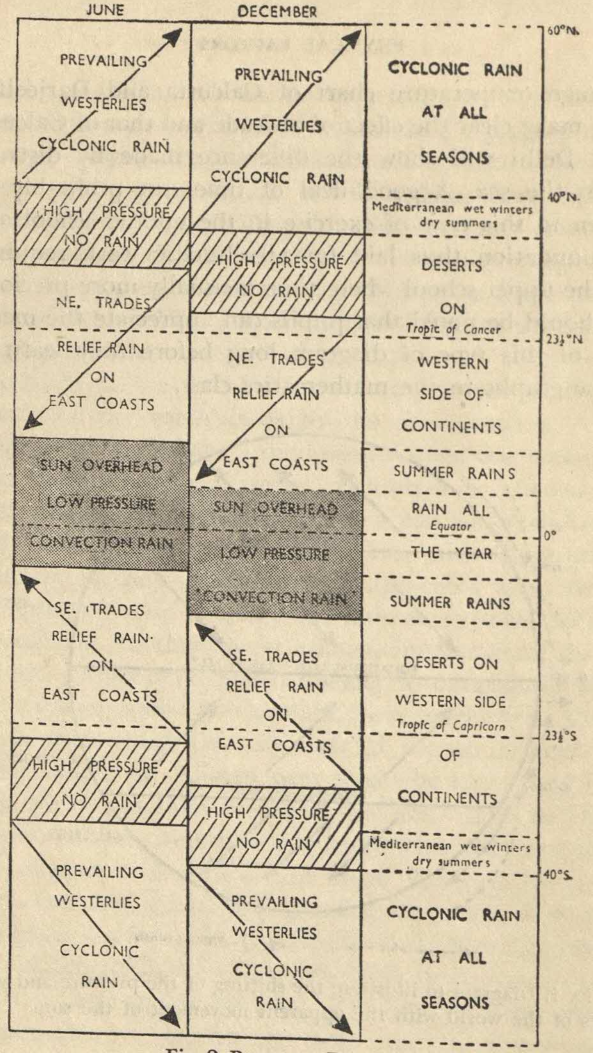


Fig. 2. Rainfall Diagram

1. Ascending air is cooled and therefore deposits moisture giving heavy rain on slopes facing the sea.

2. Descending air is warmed and therefore absorbs moisture causing dryness on the opposite slopes.

*N.B.* Latitudes only approximate. Pressure varies greatly over land masses.

intelligible to any pupil who has had a bicycle tyre punctured. Hot air is lighter than cold air ; so areas of heat are areas of low pressure. This explains why the trade winds constantly blow from the belts of high pressure about 30° latitude towards the belt of equatorial heat. This explains also why, when the surface of India becomes very hot in summer, the monsoon winds blow from the cooler sea into India. The distribution of the prevailing winds of the world can best be indicated by a diagram (Fig. 1).

The proof of Ferrel's Law is not required in schools, but the law itself should be known. The annual migration of the wind belts has important consequences and must be explained. This is not an easy lesson to teach, but it can be made clear with the aid of a diagram, which should be built up as the lesson proceeds. It is worth while spending a little time on this topic in the middle school as it is fundamental to the understanding of the climate of the world and is best taught in connexion with the geography of Africa (Fig. 2).

Rainfall is connected with winds, as winds blowing from the sea bring moisture. The main principle to be grasped is that hot air can contain more moisture than cold air and that, if air that is saturated with moisture is cooled, as by ascent to cooler regions, it must drop some of its moisture. The effect of mountain ranges in

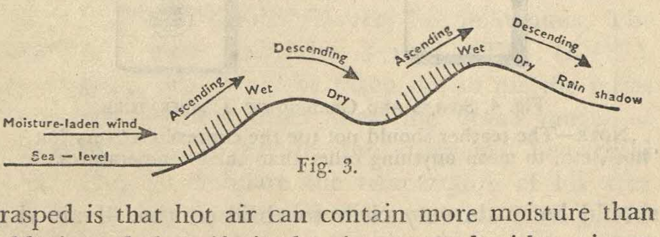


Fig. 3.

the causation of rain may be shown by a diagram (Fig. 3).

The topic of relief rainfall is one which often causes some difficulty in school, but this should not be so if it is properly explained early in the school course. It should be made very clear to children that if air rises to cross high land and is thereby cooled and deposits its moisture, of necessity it descends on the far side of the hill, is warmed and picks up moisture. The

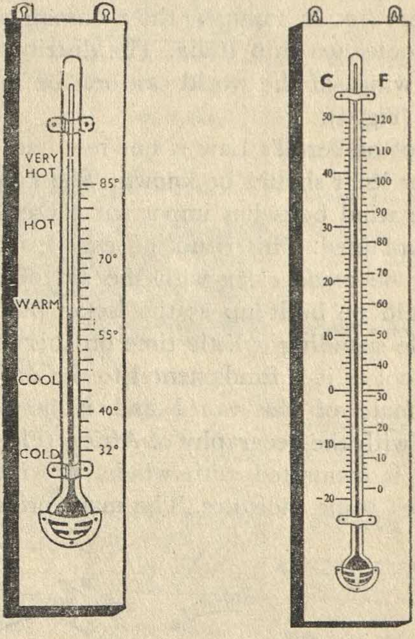


Fig. 4. SCALES AND GRADING OF TEMPERATURE

NOTE.—The teacher should not use the expressions 'very hot', 'hot', etc., to mean anything other than these temperatures.

consequence of this is that the seaward slope, facing the prevailing wind (the eastern side in the Trade Wind areas and the western side in the regions of the Westerlies), is usually wet, while the opposite is generally dry and is said to be a rain shadow area.

When the circulation of air in the tropics is understood and the principle that cool air cannot contain as much moisture as hot air, the cause of the convectional rains of the equatorial belt can be easily understood.

In teaching facts about climate it is best to put before pupils some definite statistics, which need not, however, be learnt by heart. Phrases like 'hot summers and cold winters', 'warm summers and cool winters', 'moderate rainfall', 'poor rainfall', are apt to leave the minds of the pupils rather hazy. It is better to apply the terms 'hot', 'warm', 'cool', to specific temperatures, as in the diagram of a Fahrenheit thermometer used in the United Kingdom shown on the left hand side in Fig. 4. This records a 'warm' day in U.K. which many Indian children, but by no means all, would find 'cold'. The diagram on the right represents a double scale thermometer in use in India and records a 'very hot' day in Calcutta. Under certain circumstances Calcutta children might not find 35°C. (95°F.) very hot in summer. The temperature there often rises beyond 40°C. (104°F.) Nevertheless, care should be taken not to use the terms to indicate anything other than the broad ranges of temperatures as shown in the diagram. The child should learn to compare the temperature of his area with that of other parts of India and other parts of the world. He should know that anything over 30°C. (86°F.) is 'very hot' by world standards, and that any place whose average temperature does not fall below

TUTE OF EDUCATION FOR WOME
3199
Dept. of Extension.
SERVICES

20°C. (68°F.) cannot be said to have a winter. Rainfall cannot be classified in the same way, but pupils should understand that what is an adequate rainfall in a cool climate is not so in a hotter one where the evaporation is greater. If this is made clear from the beginning, the common mistake will not be made of thinking that the rivers of temperate lands are used for irrigation.

The difference between an equable and an extreme climate is illustrated by the following figures :

| *Temperature* °C | *Jan.* | *May* | *Annual Range* |
|---|---|---|---|
| Bombay | 24.5° | 30° | 5.5° |
| Kanpur | 15° | 34° | 19° |

A good exercise in the higher classes is to give the climatic statistics of a few places and let the pupils infer the district and type of climate of the place concerned. Here is an example from an examination paper. The question used the Fahrenheit scale and showed rainfall in inches. We give the rough Centigrade and millimetre equivalents in brackets.

| | Mean Temp. Jan. F.°C° | Mean Temp. July F.°C° | Annual Rainfall Inches (mm.) |
|---|---|---|---|
| (*a*) | 81 (27) | 84 (29) | 114 (2896) |
| (*b*) | 53 (12) | 81 (27) | 1 (25) |
| (*c*) | -3 (-19) | 66 (19) | 20 (508) |
| (*d*) | 72 (22) | 52 (11) | 48 (1219) |
| (*e*) | 50 (10) | 90 (32) | 13 (330) |
| (*f*) | 55 (13) | 55 (13) | 42 (1067) |
| (*g*) | 76 (24) | 90 (32) | 49 (1245) |

The above sets of climatic statistics apply to the following places : Winnipeg, Madras, Sydney, Quito, Cochin, Cairo, Peshawar. State the place to which each set applies.

Climatic statistics of typical towns in different regions of the world will be found in Kendrew, *The Climates of the Continents,* an excellent, but rather expensive, book, and in A. Austin Miller's *Climatology.* The climatic statistics of the principal Indian towns are included in *India–A Reference Annual.* The year book *Pakistan* may also be consulted.

Geology is the science that deals with the earth's crust. As we have to deal in geography with the surface features of the earth, we can hardly ignore a science that classifies and explains many of these features. Geology explains, for example, how plains and deltas have been formed by rivers, how mountain ranges, such as the Himalayas, have been forced up, why the north of Canada has so many lakes, and many other points that must arouse the curiosity of intelligent pupils when they study the surface features of the earth.

The most important geological topics that deserve a place in school geography seem to be :

*A.* External forces affecting the surface of the earth : the work of rivers, the work of glaciers, the work of wind in dry regions (erosion, transportation and deposition), destructive and constructive action of the sea on coasts, the weathering of rocks by changes of temperature.

*B.* Internal forces affecting the surface of the earth which result in the elevation and subsidence of the land, folding of mountains, causing of faults, rift valleys, volcanic action, earthquakes.

*C.* The formation of rocks : igneous, sedimentary and metamorphic, formation of soils, underground streams and rivers.

Some geological work can be done out of doors, such as the observation of the work of a river and the collection of specimens of local rocks like standstone, limestone, clay, basalt. Much help can be obtained from pictures, slides and filmstrips of such features as glaciers, volcanoes, deserts and sea coasts. Diagrams are also useful, as, for example, the diagram of a rift valley in conjunction with pictures.

The folding of mountains can be illustrated by placing a piece of cloth, or sheet of paper, flat on a table and then pressing its sides inwards until the central part is forced upwards.

It is not possible to go very deeply into the question of soils, but some reference should be made to the relative fertility of stony soils, sandy soils, clayey soils and loamy soils. Loam is a mixture of sand and clay and is the most fertile soil known, especially when it contains humus, or decayed vegetable matter. Soils found in lowlands are generally better than soils in highlands, because the finer particles are constantly being eroded and brought down from highlands by water and other agencies and deposited in the lowlands. Exhaustion of the soil, the rotation of crops and fertilizers should be briefly dealt with.

The distribution of minerals of economic importance should be taken up with the regional study of the earth, because the location of these in certain parts must appear arbitrary. Some authorities advocate teaching all geological topics alongside the regional geography, taking up the work of rivers in connexion with the Mississippi, the work of glaciers with the Alps, and so on. This method is appropriate in the middle school, but when pupils reach the high school stage, and more especially if they are studying geography as an optional subject, it is wiser to do some systematic physical geography, taking together topics which are related to one another such as the various forms of erosion.

With reference to oceanography, an elementary survey of the earth's surface brings into prominence the far greater extent of the water surface as compared with the land surface. The location and extent of the chief oceans and seas should be known. Man makes use of the ocean chiefly for navigation ; so the chief ocean trade routes are important. The obstruction given to navigation by polar ice and the facilities afforded by the Suez and Panama Canals should be noted. Many inlets of the sea are important as harbours. Another way in which oceans affect the lives of men is in the causation of rain and by the moderating effect they exert on climate. This is most marked when the prevailing wind is from the ocean to the land, as in the British Isles. In this connexion some knowledge of the principal ocean currents and drifts, warm and cold, should be given. Shallow seas abound in fish, which is one of the most important foods of man, and the location of some of the most important fishing grounds has an important bearing on human geography.

## III

## BIOLOGICAL FACTORS

THE main types of natural vegetation in the world are equatorial forest, monsoon forest, deciduous temperate forest, coniferous forest, grasslands (savanna and steppe or prairie), scrub deserts and deserts hot and cold. The distribution of natural vegetation depends mainly on climate and relief. Where there is continuous warmth and rain throughout the year, as in the equatorial belt, there is dense evergreen forest ; where there is not enough rain for tree growth, but enough for grass, the great grasslands of the world are found, as in Canada and Siberia ; where there is insufficient rainfall even for grass to grow, one finds the scrub deserts and the deserts. Coniferous trees with their narrow leaves are specially adapted to withstand cold and so coniferous forests are found in the polar margins of temperate lands and on high mountains. Broadly, where the rainfall is over 65 centimetres, the natural vegetation is forest ; where the rainfall is between 65 and 25 centimetres, the natural vegetation is grass ; where the rainfall is less than 25 centimetres, we find scrub deserts and deserts. It is important to make clear that the term ' forest ' in geography is always used to mean those areas where the dominant form of vegetation is trees, since the term is often used in India to mean any area which is not under cultivation. This is more accurately termed 'scrub'. Pictures are a great help in all teaching of vegetation and could be used to illustrate the difference between tropical and coniferous forest, scrub lands, Mediterranean vegetation and deserts.

The influence exerted by a particular type of natural vegetation on human life in different parts of the globe is roughly the same. Thus we find that equatorial and tropical forests, whether in the Amazon basin, the Congo basin or elsewhere, are generally thinly populated, small groups living in clearings in the forest, often on the banks of rivers. The native inhabitants are low in the scale of civilization and maintain themselves by collecting fruits, fishing, hunting and a little primitive agriculture. Again, hot deserts, wherever they may be situated, are generally thinly populated by a few oasis dwellers and by nomadic tribes that wander from one scanty pasture to another, depending for their maintenance on their animals, among which the camel is of special importance. Here civilized man has to a great extent shown himself superior to his environment. The question of the interaction between man and his environment will be discussed more fully in the next chapter.

Forests occupy about 15 per cent of the total area of India and are of immense economic importance to the country. A more careful study of these forests than is usually made is desirable in Indian schools. India is a large country with many different types of climate and so has many different types of forest. The principal kinds are the evergreen forests of the Western Ghats and the Eastern Himalayas, the Himalayan forests with their pines and deodars, the monsoon forests of peninsular India with teak and sal as important timber trees, the mangrove forests of the coasts, as in the Sunderbans, and the arid forests of Rajasthan with the typical babul tree. The wealth of Indian forests depends not only on the production of valuable timber for building and other purposes, but also on a great variety of minor products, such as grass for fodder, fruits, gums, lac and bamboos, which have proved valuable for paper making.

The necessity of conserving the forests should be emphasized. Trees take a long time to grow and private owners cannot be expected to take a great deal of trouble to secure benefits for posterity. Government forest policy is directed mainly towards protection, regeneration and development. Protection against robbery is secured by a staff of forest guards and protection against fire by cutting wide lanes, or fire lines, to prevent fire spreading from one block of forest to another. Some forests, e.g. pine forests, contain one species of tree only and these regenerate themselves after cutting. In mixed forests, however, Government has to see that, when valuable trees are cut down, equally or more valuable trees come up to take their place. By development is implied, chiefly, opening up roads and railways to enable valuable timber to reach markets, establishing saw-mills in forests to cut up the timber and make it more portable, and research work.

Turning to cultivated plants, we find that the geographical factors that determine which plants can be grown in any particular region are climate and soil. It would be no use trying to grow rice in Canada or wheat in the Ganga delta. The following examples are given to show the conditions favourable for the successful growth of some important crops.

*Rice.*—A temperature of over 20°C., a rainfall of over 12 cm. a month during the growing season and an impervious soil, such as clay, over a level surface, to hold the water. Suitable conditions are found in river valleys and deltas in monsoon regions.

*Wheat.*—A cool growing season with some light rain, sufficient sun to ripen the grain, and a good firm soil. Such conditions are found during the cool season in northwest India and the Narmada Valley, but in other parts of the world, such as Europe, North America and Australia, wheat is grown as a summer crop.

*Sugar-cane.*—Heat, moisture and a rich well-drained soil. It can be grown only between 37°N. and 30°S. latitudes and requires over 150 centimetres of rain per annum. Cuba, India and Java are the chief growers.

*Sugar-beet.*—A well-drained soil, light rain and an average summer temperature of about 16°C., as in the north German plain.

*Cotton.*—Warmth, light rainfall and a soil capable of retaining moisture. The seven months' growing season must be free of frost. After the boll, or pod opens, there should be no rain. The black soil region in western India is suitable. In other parts of the world these conditions are found in the southern states of America and the plateau of East Africa. In the Punjab and Egypt, cotton is grown under irrigation as, though the rainfall is not sufficient, the other conditions are fulfilled.

*Jute.*—Heat and heavy rain during the three months' growing season, a fertile soil and abundant water for retting. Conditions are very favourable in the Brahmaputra valley in eastern Bengal and, to a lesser extent, in the Ganga delta.

*Coconut.*—This crop is important along the west coast of India, in Ceylon and in the islands of the Pacific.

A mean temperature of 20-30°C., a rainfall of over 100 centimetres and proximity to the sea.

*Rubber.*—This crop is cultivated in Ceylon, Malaysia and Indonesia. The wild rubber comes from the Amazon basin. Heat and rain are required throughout the year, as in the equatorial region of South America.

*Tea.*—About 250 centimetres of rain, warmth and a well-drained soil. In India, Assam, Darjeeling, the Nilgiris and the Himalayas of Uttar Pradesh are the chief tea-growing areas.

*Coffee* is best grown on mountain slopes within the tropics, as in the case of tea, but shelter from the direct rays of the sun is necessary. This crop is grown in India in Coorg, but the most important coffee-growing area in the world in terms of sheer quantity of coffee produced, is the Sao Paulo district of Brazil.

*Cocoa* needs the heat and moisture of the tropics with shelter from heavy winds because of the weight of the large pod. It is generally grown in sheltered valleys within 15° of the equator, e.g. in Ceylon and the West African coastal region.

It will be seen from the above examples that geographical conditions greatly limit the choice of crops that cultivators can grow in different parts of the world. The relation between the nature of the crop and the climatic conditions suitable to its growth should always be in the mind of the teacher, even in the most elementary story lessons of the Junior School. If this is so the association between the two will gradually be built up in the mind of the pupil and thus a sound foundation be laid for the detailed economic geography of the upper school and such mistakes will not be made as 'Cotton is grown in Lancashire' or 'Rice is grown in the East Punjab plain.'

In the province of zoology the geography teacher may refer in passing to interesting wild animals such as tigers, lions, giraffes, kangaroos, but there is no need to deal with wild animals very fully, as these have not as a rule a great influence on human life, except perhaps elephants that provide ivory from their tusks and the fur-bearing animals of the coniferous forests.

Fishing is an important industry and fish form a part of the diet of a large portion of the human race. The usefulness of shallow seas, such as the North Sea and the Inland Sea of Japan, for fishing, should be stressed, and important fishing grounds, such as the Grand Banks off Newfoundland, noted. River fisheries, such as the salmon fisheries of British Columbia, should be mentioned when they engage a large number of people. Descriptions of fishing methods and of the preparation of fish for the market in canning factories, etc., may be given in the human geography of various regions.

Some insects have sufficient influence on the lives of men to deserve mention in geography. Among these are the mosquito, which carries malaria and yellow fever, and the tsetse fly, which causes sleeping sickness and renders vast areas in Africa impossible for animals such as horses and cattle.

Domesticated animals, such as cattle, buffaloes, horses, sheep, goats and camels, have great economic importance and geographers must deal with their distribution, the conditions favourable for their health and greater productivity, and the use man makes of them in different parts of the world. The number of cattle in India is estimated to be 200 million, but compared to the cattle

3199
910'7
Mac

in other countries the quality is inferior. This is due to poor feeding and indiscriminate breeding. Fodder crops for cattle are not usually grown in India and a great part of the available pasture is eaten up by useless cattle. In a few parts of India selective breeding has resulted in a great improvement in quality.

The way in which different animals are adapted to different environments should be stressed, as, for example, the way in which the camel is adapted to desert conditions. The great grasslands of the world are specially suitable for the rearing of cattle and sheep, cattle in the wetter and sheep in the drier parts. The Australian downs, the South African veldt and the South American pampas are well-known breeding grounds. The goat is lauded as 'the poor man's cow', but it can be a most destructive creature unless carefully controlled. It is believed by some that the desiccation of many parts of Asia, such as the plateau of Anatolia, is largely due to the destruction of forests owing to goats eating up all the young plants.

# IV

# HUMAN GEOGRAPHY

Geography is not a mere recital of unrelated facts. Most geographical facts are related to other geographical facts and it is the business of geography to elucidate these relations. In geography teaching, therefore, cause and effect should be traced wherever possible and in particular the influence of physical and biological factors on human life.

So long as we are considering only the physical and biological factors of geography we can connect cause and effect with a fair degree of confidence. We know, for example, that the revolution of the earth round the sun and the inclination of its axis cause the seasons and that the rotation of the earth causes day and night. We know that rivers by depositing material eroded from higher levels form plains and deltas. We know the effect of mountain ranges that lie in the path of moisture-laden winds, and we know the relation between rainfall and natural vegetation.

When we consider human geography, it is best to proceed with some caution in deducing causal relations. Human beings have some freedom and are not entirely dependent on their environment. One group of human beings may avail itself fully of the natural resources existing in its environment, another group may not. The coal of Britain, for example, is being fully exploited ; in China immense quantities of coal are known to exist, but all the mines are not yet fully exploited. It is preferable, therefore, in tracing the influence of geographical conditions on human activities not to use the word 'cause', but to use some such expression as 'favour the development of'. Thus the existence of coal in Britain was not the cause of the growth of British industries, but it did favour the development of those industries.

Again, man has in many ways by intelligence and industry surmounted the obstacles imposed by nature. He has pierced mountain barriers by railway tunnels and turned deserts into productive fields by means of canals. Formerly the sea was an impassable barrier; then man ventured on it in little ships that were largely at the mercy of the winds; now he steers his ships on the sea where he likes. Aeroplanes now cover in a few hours journeys that would take men without mechanical means months to perform. As time goes on, man tends to be less and less dependent on his environment.

Nevertheless, although we must concede some freedom of action to human beings and power to overcome natural obstacles, the geographical environment does impose certain definite limitations on human activities. Wheat is not grown in the equatorial lowlands, nor rice in Canada. Cotton is not grown in the Ganga delta, nor jute in the Deccan. It would be futile to dig into the earth at any point selected at random and expect to find gold or coal or some other valuable mineral.

Human settlement is governed largely by geographical conditions. The population is densest where life is comparatively easy. River valleys have a fertile alluvial soil and, if temperature and rainfall are adequate, they can provide food for a large number of people. On the other hand, mountain regions, with a few exceptions such as Kenya, are generally barren and can support comparatively few people. Hence one finds a dense population in the Ganga valley, but not in the Himalayas. Grasslands suitable for pasture tend to be

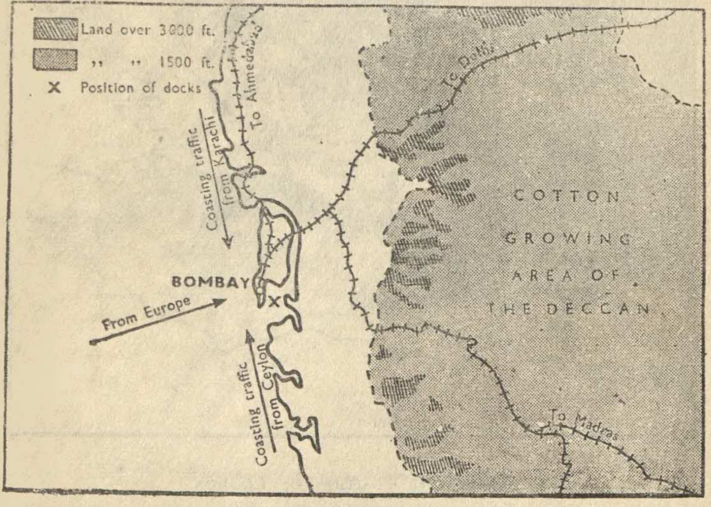


Fig. 5. The Position of Bombay

1. The comparatively broad coastal plain behind the port on which food for a dense industrial population can be grown.
2. The two gaps in the Western Ghats used by the railways.
3. There is no railway running south from Bombay over the plain.
4. The position of the docks on the side of the island facing the mainland and so protected from the violence of the south-west monsoon.

rather sparsely populated, as animals require large areas on which to graze, hence the sparse population of the Murray-Darling Basin. In desert regions the population

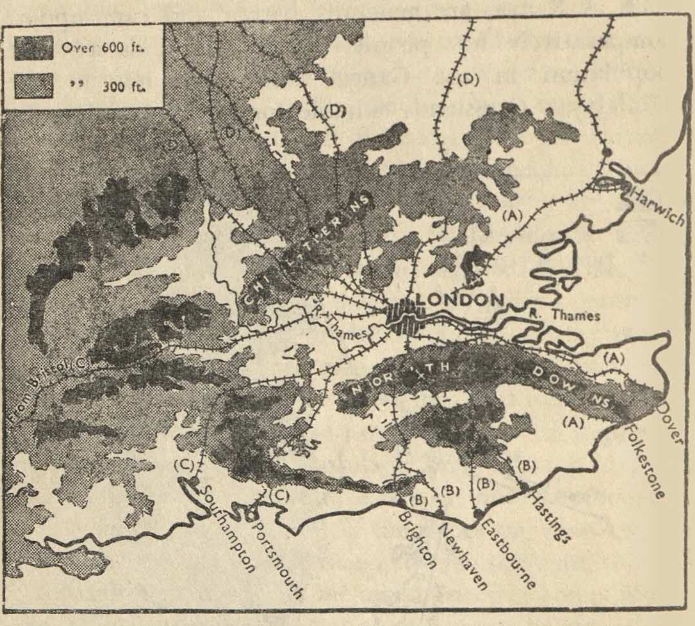


Fig. 6. The Position of London

1. The position of the town at the head of the estuary of the Thames. The tide reaches London twice a day.

2. The position of the town in the centre of the lowland, known as the London Basin, between the chalk hills of the Chilterns and the North Downs.

3. The numerous railways lines converging on London each using a gap in the chalk hills and connecting the capital with :

(A) The packet stations for the Continent.
(B) The south coast seaside resorts.
(C) The large ports of Southampton, Portsmouth and Bristol.
(D) The manufacturing towns of the Midlands and the north.

4. The comparatively low hills round London which yet cause routes to use gaps.

5. London is a bridge town, the first settlement having grown up at the lowest point on the river where a bridge could be built.

is usually scanty or non-existent but the occurrence of valuable deposits such as coal or gold often attracts a

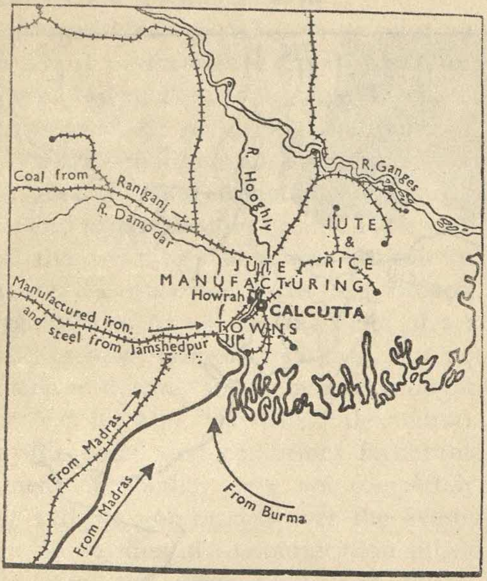


Fig. 7. THE POSITION OF CALCUTTA

1. The position of Calcutta some distance up the Hooghly and away from the delta.

2. The two railway lines, coming down from the Chota Nagpur Plateau, bring coal and manufactured iron goods, both heavy and carried on the downward line, while the comparatively lighter foodstuffs for the mining and manufacturing towns on the Plateau can be carried up on the return journey.

3. The flat land between the Ganga and the Hooghly given over to the growing of rice for food and jute for the raw material used in the mill towns along the Hooghly north of Calcutta.

4. The delta areas with no railway lines—the land is too new for settlement or for roads or railways.

dense population. When gold was discovered in the Great Australian desert it was found worth while to build a water pipe-line from the coast to the gold fields, 200 miles away, in order to make it possible for people

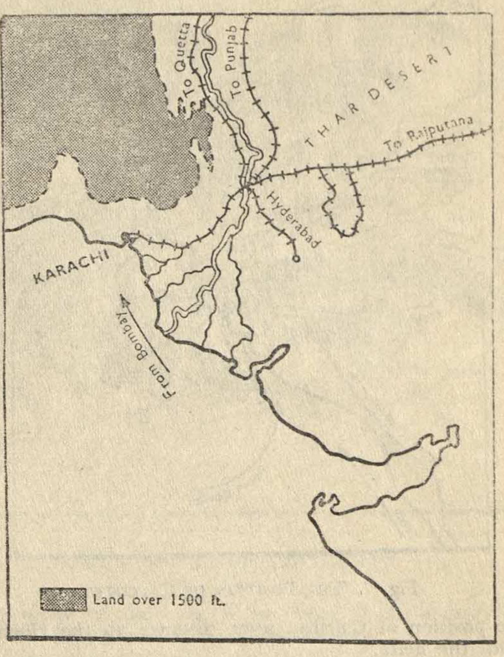


Fig. 8. The Position of Karachi

1. The position of the port with regard to the delta.

2. The position of Hyderabad—a bridge town at the head of the delta.

3. The railway lines built to the west of the delta, on both sides of the river north of Hyderabad, and on the south of the desert. No line crosses the delta itself or the desert.

to live near the mines. Similarly men have overcome great obstacles in their desire to obtain the gold in the frozen north of Alaska.

A study of the geographical factors that have favoured the development of cities is of great interest. Some important factors are noted below :

1. Convergence of sea routes to get past an obstacle, through straits or through a canal (e.g. Gibraltar and Copenhagen, Aden, Port Said, Cape Town, Singapore).

2. Convergence of sea routes and land routes, i.e. ports. Essential conditions for development are a safe harbour, good lines of communication inland and a populous and productive hinterland. Ports may be on an inlet of the sea (e.g. Bombay, Vancouver, Sydney, Durban) ; on the estuary of a river (e.g. Broach, London, Hamburg, Buenos Aires) ; on the delta of a river (e.g. Calcutta, Rangoon, Canton) ; close to, but not on, the delta of a river, to avoid silting by mud brought down by the river (e.g. Karachi, Marseilles, Alexandria).

It may be noted that conditions favourable for the development of Bombay were not completely fulfilled until the railway was carried over the Western Ghats to provide good lines of communication inland. It may be noted also that ports on deltaic rivers, such as Calcutta, are always in danger of being silted up. Indeed, unless drastic action is taken, the future of Calcutta as a great port is extremely doubtful.

3. Convergence of land routes to get past an obstacle, through a gap or pass (e.g. Peshawar, Delhi, Chicago).

Note the position of Delhi in the gateway to the Ganga valley between the Himalayas in the north and the Thar Desert in the south. This explains why so many battles were fought in the plain of Panipat just north of Delhi.

4. Confluence of river valleys (e.g. Allahabad, Khartoum, St Louis).

5. Bridging places, often at the nearest possible point to the sea (e.g. London, Paris).

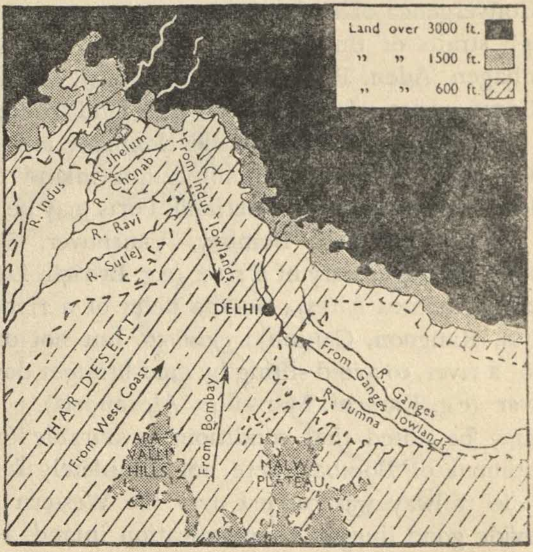


Fig. 9. THE POSITION OF DELHI

1. Delhi stands on slightly higher ground than the Ganga and the Indus valleys between which it lies. It is just about the centre of the whole Indo-Ganga Lowland.

2. Delhi is the meeting-place of natural routes:
   - (*a*) From the Indus Lowland round the northern end of the Thar Desert.
   - (*b*) From the Ganga Lowland.
   - (*c*) From the West Coast over a gap between the Aravalli Hills and the Malwa Plateau.
   - (*d*) From the West Coast round the eastern side of the Thar Desert.

6. Minerals (e.g. Jamshedpur, Johannesburg).

Like human settlement, human occupations also are governed largely by geographical conditions. Where warmth and rainfall are adequate and the soil is fertile, agriculture is an important occupation. The nature of

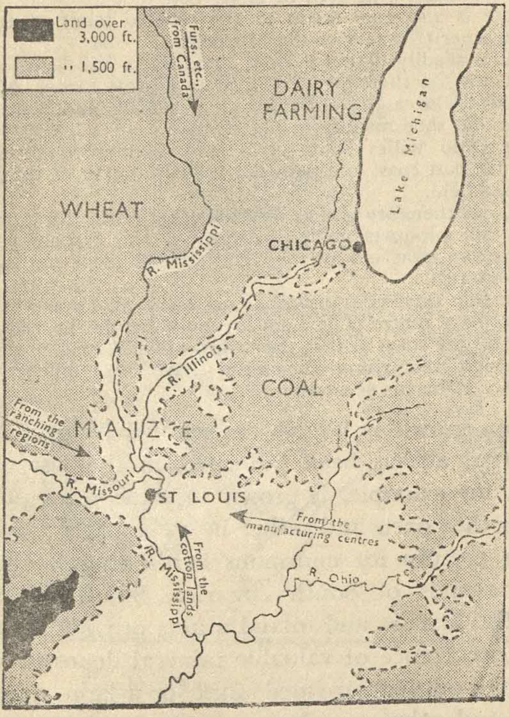


Fig. 10. THE POSITION OF ST LOUIS

1. St Louis stands near the junction of three great waterways: the Mississippi, the Missouri and the Illinois.

2. This gave it importance in the early days of the history of the U.S.A. when roads were few and railways non-existent so that all transport was by water.

3. Each of these waterways leads to a different type of country with different products. The Mississippi gives access to the wheat lands north of St Louis and the furs of the coniferous belt of

Canada upstream, while downstream it leads to the cotton lands of the south. The Missouri gives access to the cattle-ranching lands of the drier west, and the Illinois gives access to the dairy-farming region of the damper area round Lake Michigan. The town itself lies in the centre of the corn or maize belt.

4. There is also easy access to the tobacco lands of the Ohio Valley, another tributary of the Mississippi.

5. Coal is readily obtained from the Illinois coal-field.

6. St Louis has therefore developed as a great cattle, cotton and fur market; also as a centre for flour-milling and tobacco, and as a boot and shoe manufacturing centre.

7. The Ohio Valley route gives easy communication with the ports of the east coast and with the industrial area of the Pennsylvanian coal-field.

8. St Louis therefore acts as a distributing centre for agricultural and pastoral products going eastward to the densely populated manufacturing areas and for the manufactured goods and machinery going westwards.

9. Now that quicker transport is necessary, St. Louis has become a large railway centre. The lines are built beside the rivers which converge on the town so that the valleys are still used as route-ways even though the rivers themselves have lost much of their importance as means of transport.

the crops grown is largely determined by geographical conditions, as has been indicated in the last chapter. Wheat, for example, is grown in some parts of India, rice in other parts and millet in other parts. Grasslands provide pasture for enormous herds of animals, as in the grasslands of South America, South Africa and Australia. The sea and inland waters provide for fishing.

The occurrence of valuable mineral deposits, such as coal, gold, oil, has provided work for a large number of miners and others, as, for example, in the Rand area of South Africa. The existence of one of the three chief sources of power—coal, oil or water-power—is favourable for the development of industries, especially if raw materials, such as iron and cotton, can be easily obtained. The presence of coal near the iron ore of the Chota Nagpur plateau has aided the development of the iron and steel industry of Jamshedpur, Burnpur, Rourkela and Bhilai, the jute manufactures of Calcutta and the

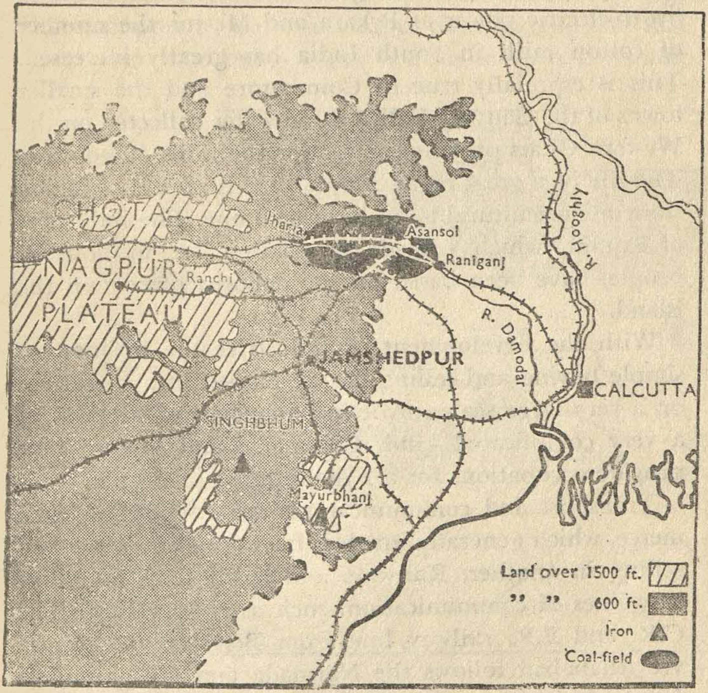


Fig. 11. The Position of Jamshedpur

1. The position of Jamshedpur on the edge of the Chota Nagpur Plateau.

2. The position of the coal-fields in the Damodar Valley and the iron ore on the edge of the plateau to the south of Jamshedpur.

3. The number of railway lines connecting the manufacturing town with (i) the source of raw material; (ii) the source of power; (iii) the industrial towns along the Hooghly; (iv) the port.

4. Limestone (used for smelting the ore) and manganese (used in the manufacture of steel) are also found on the plateau.

Hooghly towns. The lack of large deposits of coal in other parts of India has hampered the industrial development of the country. With the development of hydro-electric power at Pykara and Mettur the number of cotton mills in South India has greatly increased. This is especially true of Coimbatore and the smaller towns of the Cauvery Valley. Rain-water collected on the Western Ghats provides power for the mills of Bombay. The life of a great many people in this area is changing from an agricultural to an industrial one. The industries of Britain, which provide occupation for millions of people, have been based on the deposits of coal in the island.

With the development of industries the business of simple buying and selling has developed into commerce on a very large scale, involving financial transactions of a very complicated kind. Commerce and finance now provide occupations for a large number of people.

Transport and communications are essential to commerce, which generally involves buying in one place and selling in another. Railways and roads tend to follow easy lines of communication, such as river valleys. The C.R. and E.R. railway line from Bombay to Calcutta via Allahabad follows the Narmada and Ganga valleys for the greater part of its length, and the Hudson valley from New York carries no fewer than six railway lines. Rivers themselves carry a great deal of traffic, e.g. the Yangtze, the St Lawrence, the Rhine and the Danube. This is something which children in India find difficult to realize, because most Indian rivers are used more for irrigation than for navigation. Extra care should therefore be taken when teaching this subject to give definite examples and to use pictures freely (see pp. 97-103).

The use of good maps is essential in all lessons concerning transport. It should be made clear at an early stage that transport by water is cheaper than by land and that where heavy or bulky goods are to be moved a water route is a very great advantage. Thus the Rhine is of great value as a means of transporting the coal of the Saar and the iron and steel goods of the Ruhr basins. The St Lawrence together with the Great Lakes is used for moving large quantities of bulky wheat from the

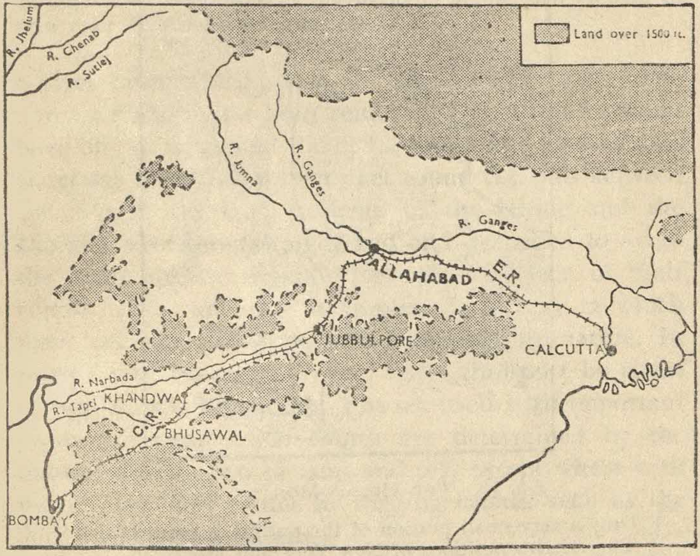


Fig. 12.

Map to show how the Central and the Eastern Railways use the valleys of the Narmada and Ganga for the route from Bombay to Calcutta.

Note the position of Allahabad, Jabalpur, Khandwa and Bhusawal. Why are all these towns railway junctions?

prairies to the industrial towns of the east and to the sea for export to Europe. It frequently happens that

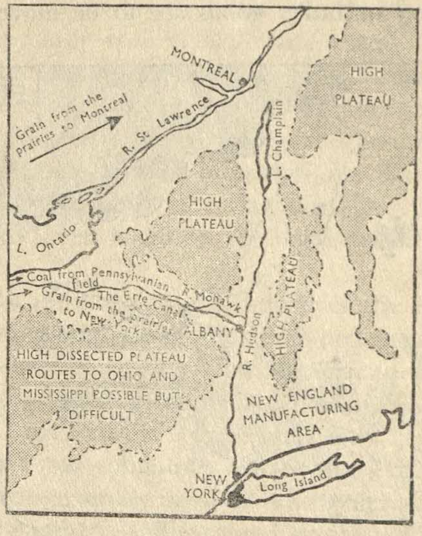

MONTREAL
Grain from the prairies to Montreal
R. St Lawrence
L. Champlain
HIGH PLATEAU
HIGH PLATEAU
L. Ontario
Coal from Pennsylvanian field
Grain from the prairies to New York
The Erie Canal
R. Mohawk
ALBANY
R. Hudson
HIGH PLATEAU
HIGH DISSECTED PLATEAU ROUTES TO OHIO AND MISSISSIPPI POSSIBLE BUT DIFFICULT
NEW ENGLAND MANUFACTURING AREA
NEW YORK
Long Island

Fig. 13. THE HUDSON-MOHAWK ROUTE

1. Only a very small portion of the outline is required.
2. The relative positions of New York and Montreal.
3. The easy connexion between New York and the interior of the continent via the Mohawk and the Great Lakes.
4. The position of Albany at the junction of the two routes:
   (i) It is the head of navigation on the Hudson for large vessels.
   (ii) The Erie Canal which uses the Mohawk Valley to connect the Great Lakes and the Hudson by water. Both the Hudson and Mohawk above Albany are too shallow to allow large vessels to be used on them.
5. The New England manufacturing towns now rely on the coal of the Pennsylvanian field. This is moved by the Hudson-Mohawk route.
6. In the early days of colonial expansion this route was not available as it was occupied by hostile Indian tribes. Therefore the first routes into the interior plains were made up the Susquehanna and Delaware and down the Ohio over the highland marked

'dissected plateau'. These routes are still used but the gradients are too steep for the movement of heavy goods.

7. The Hudson-Mohawk valleys carry many railway lines. These have been omitted in order not to congest the map.

8. When drawing a sketch-map of this nature the details of an exact contour cannot be expected. It is therefore better to draw an approximate line showing the boundry of the high ground. In such cases, no height should be given.

a river cannot be used to its fullest extent until some natural obstacle has been removed. For example, canals have had to be cut on the St Lawrence and Great Lakes waterway to enable ships to get round the falls between the lakes; and long stretches of the Rhine and the Danube have been straightened and deepened to avoid the many shallow meandering curves of part of their course. These are good examples of the way in which man has surmounted obstacles imposed by nature. In many countries, as in France, water transport by rivers is supplemented by canals. The sea itself is an important highway. Ocean trade routes are determined by the natural distribution of land and sea, except where man has created new routes by digging canals, such as the Suez and Panama Canals.

Human society with the advance of civilization has become more complex and many specialized professions, such as those of doctors, lawyers, teachers and engineers, have sprung up. Forms of government and administration have also become more complex. No study of geography would be complete without some knowledge of the way in which people live and are governed in different lands.

The principle of tracing causal relations, where possible, has an important bearing on the order of topics in the study of any area, whether a continent, a country, a province or a natural region. Generally it will be found best to take the physical and biological factors first and the human factors afterwards so as to bring out the effect of the physical and biological factors on the human factors. The logical order of topics would thus generally be somewhat as follows :

*Physical and biological*

1. Position
2. Relief
3. Climate
4. Natural vegetation
5. Minerals

*Human*

1. Occupations ; agriculture, industries, trade
2. Distribution of population
3. Cities
4. Communications
5. Social life, Government, etc.

It is not suggested that the above order should always be strictly followed. The order should be varied to suit the area being studied. In unimportant areas some of the topics may be omitted altogether. In other areas topics not included in the above list require study, e.g. geological structure or wild animals.

The order suggested above may be regarded as the logical order. But the logical order is not always the best for school purposes. The psychological order is sometimes better, especially in the lower classes. The psychological order means, in effect, beginning with something that will attract the attention of the pupils.

Thus we might begin a lesson on Japan with a picture of Fujiyama, going on to the mountainous and forested nature of the greater part of Japan. Exciting events such as earthquakes, floods, or eruptions of volcanoes, give good opportunities of enlisting the attention of pupils.

## V

# THE REGIONAL METHOD

To explain what is meant by regional geography or the regional method of teaching geography it is necessary first to define the term 'natural region'. A natural region is one that is naturally different from the adjoining regions. Thus the region of the Himalayas is naturally different from the region of the Ganga valley and the wet western coast strip of peninsular India is naturally different from the drier Deccan plateau. A natural region is essentially different from a political division, though the two may occasionally coincide. Politically the Himalayas are apportioned among a number of different countries and states, e.g. East and West Punjab, Uttar Pradesh, Nepal, Sikkim, but naturally they form one major natural region.

When we embark on the study of any unit, whether it be the world, a continent, a country or a province, we soon come to an end of what we can usefully do by studying the unit as a whole. To make a more detailed study we have to break up the unit into smaller units and study each of these separately. The question then arises how we should subdivide our unit. One way is to take the political subdivisions. The other is to divide the unit into regions that are naturally different from one another. The latter is the more scientific method. If we accept the definition that geography is the study of the interaction of man and his physical and social environment, it is clearly best to take up for study different types of physical environment, i.e., different natural regions. The major political divisions are, of course, of great practical importance and must be taught sometime, but for the purpose of relating the physical environment and human activities the study of natural regions is most effective.

The regional method of teaching geography is, then, a method in which the area studied is divided into natural regions, each of which is studied separately. Thus, we may divide Ceylon into three natural regions:

(1) The Central Highlands–mountainous, heavy rainfall, thick tropical vegetation, plantations, Kandy.

(2) The Lowlands of the south and west–wet, agriculture, industries, dense population, Colombo.

(3) The Lowlands of the north and east–little rainfall, irrigation, coastal settlement.

Scotland may be divided into three natural regions:

(1) The Northern Highlands–mountainous, poor soil, few people.

(2) The Southern Uplands–hilly, sheep pastures, few small towns.

(3) The Central Lowlands–good soil, coal-fields, rivers Forth and Clyde, industries, dense population, Edinburgh, Glasgow.

The chief advantage of the regional method is that it is the quickest way of getting pupils to grasp the salient features of the geography of any area. No other method can give so quick a start or so sound a basis for further study.

It should be noted that the boundaries of natural regions are often not exactly defined and that one natural region often merges insensibly into another. It should be noted also that in making broad divisions minor divisions have to be overlooked. The nature and number of the divisions made depends on the degree of closeness of study deemed necessary. In some cases it is useful to make broad divisions first and to subdivide them afterwards. Thus, the Yangtze valley may be taken as one major region and then subdivided into three minor regions, the Red Basin, the lower valley and the delta.

The chief factors to be considered in dividing an area into natural regions are relief and climate. On relief and climate depend the vegetation and animal life of a region, and as a result of that, to a great extent the nature of human life in that region. In dividing large areas into natural regions climate is more important, and in dividing small areas, relief.

Let us consider the natural regions of the world. It is obvious that the polar regions are different in climate from the equatorial regions and that deserts and forests and grasslands are different from one another. Barker and Brooks in *Regions of the World* give the following regions :

1. Lands of Snow and Ice
2. Lands of Cold Forests
3. Lands of Broad-leaved Forests
4. Temperate Grasslands
5. Mediterranean Lands
6. Desert Lands
7. Equatorial Forests and Tropical Grasslands
8. Monsoon Lands
9. The Islands of the Pacific
10. High Mountain and Plateau Lands
11. The Industrial Regions of Europe
12. The Industrial Regions of North America

Herbertson in his *Senior Geography* made a more detailed division of the world into natural regions, of which he recognized the following types:

1. *Polar Types*
    - (*a*) Lowlands, e.g. Tundra
    - (*b*) Highlands, e.g. Norway
    - (*c*) Ice-covered, e.g. Greenland

2. *Cool Temperate Types*
    - (*a*) Western Margin, or West European Type
    - (*b*) Eastern Margin, or St Lawrence Type
    - (*c*) Interior Lowlands, or Siberian Type
    - (*d*) Interior Highlands, or Altai Type
    - (*e*) High Plateaux, or Tibet Type

3. *Warm Temperate Types*
    - (*a*) Western Margin, or Mediterranean Type
    - (*b*) Eastern Margin, or China Type
    - (*c*) Interior Lowlands, or Turan Type
    - (*d*) Plateau, or Iran Type
    - (*e*) Plateau with cold winters, or Mongolian Type

4 & 5. *Types of Tropical Hot Lands*
- (4*a*) Western Desert, or Sahara Type
- (4*b*) Monsoon Summer Rain Type of eastern and southern margins
- (4*c*) Summer Rain Type of Interior, or Sudan Type
- (4*d*) Moderate Plateau Type of East Africa
- (4*e*) High Plateau Type of Ecuador
- (5*a*) Wet Equatorial Lowlands, or Amazon Type
- (5*b*) Wet Equatorial Mountainous Islands, or Malay Type

In dividing a continent into natural regions we may base our division on differences of relief or on differences of climate. Often it is convenient to make two divisions, one according to relief and the other according to climate. Asia, for example, may be divided (after Stamp) into four main divisions of relief :

1. The Northern Lowlands
2. The Central Highlands
3. The Old Plateaux of the South
4. The Great River Valleys

It may also be divided into climatic and natural vegetation regions as follows :

1. The Tundra
2. The Coniferous Forest
3. The Temperate Grasslands
4. The Cold Deserts
5. The Hot Deserts
6. The Temperate Forests
7. The Monsoon Regions
8. The Equatorial Forests

Similarly in North America we have as the main divisions of relief :

1. The Rocky Mountain System
2. The Central Plains
3. The Eastern Highlands

As the main climatic and natural vegetation regions we have the following :

1. The Tundra
2. The Coniferous Forests

3. The Deciduous Forests
4. The Temperate Grasslands (Prairies)
5. The 'Mediterranean' Region on the west coast
6. The Deserts and Semi-deserts
7. The Warm Temperate Forests
8. The Equatorial Forests

In dividing the countries of North America into natural regions we may base our division on relief, or on climate and natural vegetation, or on a combination of the two. Thus, we may divide Canada into the following major natural regions:

1. The Rocky Mountains and the Pacific Coast
2. The Cold North (Tundra and Coniferous Forest)
3. The Prairies
4. The St Lawrence Basin

It is not necessary for school purposes to divide every country in the world into natural regions, but it is desirable to divide in this way the more important countries in order that the pupils may obtain a firm grasp of the main natural divisions of each. The natural regions of Ceylon, Scotland and Canada have already been given above as examples. As a further example we may consider the natural regions of another country, China. In China three great river valleys are important factors in human life, as in these valleys the bulk of the population is concentrated. From a study of the relief of China the natural regions given below the map emerge.

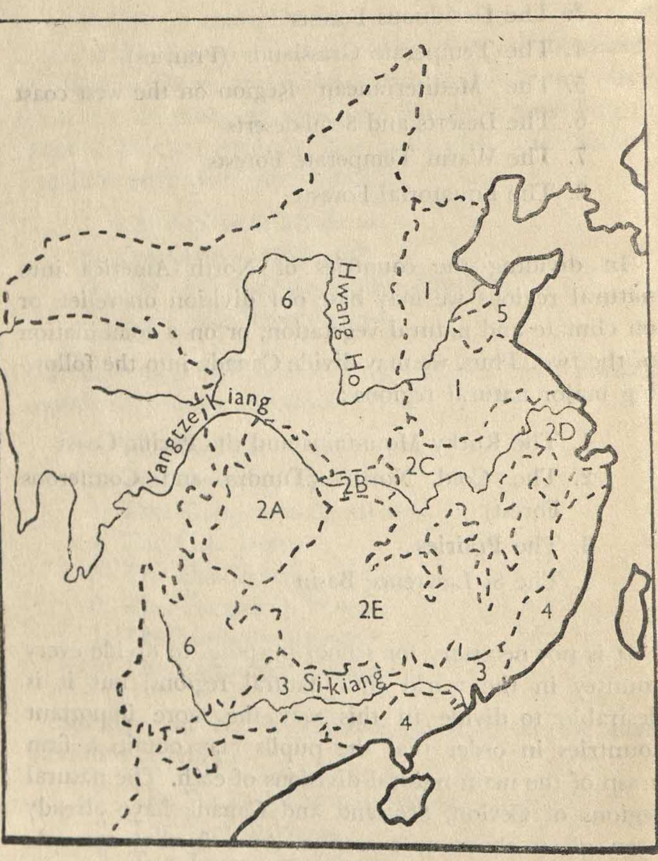


Fig. 14. The Natural Regions of China

1. The Basin of the Hwang Ho
2. The Basin of the Yangtze Kiang
    - (*a*) The Red Basin
    - (*b*) The Gorge

- (*c*) The Lower Valley
- (*d*) The Delta
- (*e*) The Highland on the South draining to the Yangtze

3. The Basin of the Si-kiang
4. The South-East Coastlands
5. The Shantung Peninsula
6. The Mountainous West

NOTE.—The natural regions are based on relief. Only 1, 2 (*c*), 2 (*d*) and 3 have any extensive area of lowland.

The natural regions of India and Pakistan, if only the major divisions are required, as in lower classes, are as follows :

1. The Himalayas
2. The Indo-Ganga Plain
3. The East and West Coast Strips
4. The Tableland Region

If, however, the division is to be more detailed, there is room for some difference of opinion. Many schemes are open to the objection that the borderland regions between the Deccan plateau and the Indo-Ganga plain are not adequately dealt with. There is often some confusion about the northern boundary of the Deccan, which is taken variously as the Ajanta Hills, the Satpura Hills, or the Vindhya Hills, and immense areas are often conveniently ignored. The best division of India and Pakistan into natural regions seems to be that given by Mr J. N. L. Baker in the summer issue of *Geography* (1928). These are given below the map.

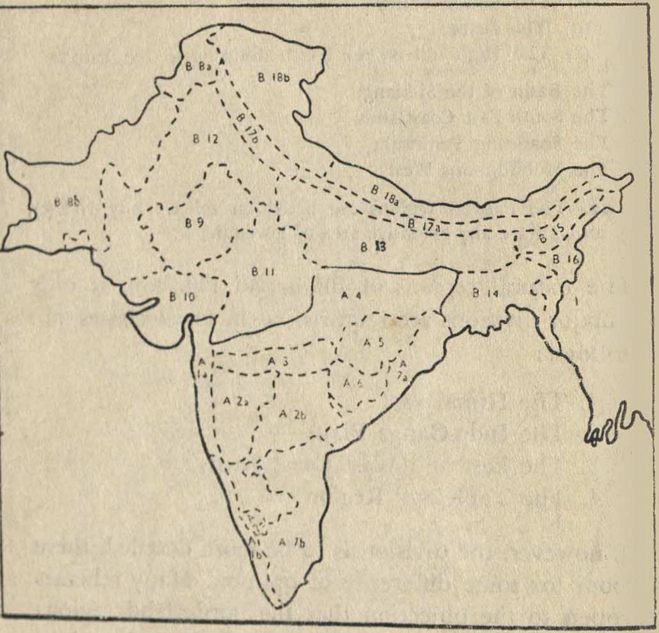


Fig. 15. The Natural Regions of India and Pakistan

## *A. Peninsular India*

1. The West Coast
   (*a*) north of lat. 16° N.
   (*b*) south of lat. 16° N.
2. The Deccan Region, bounded by the Ajanta Hills, the Chhattisgarh Plain and the Eastern Ghats.
   (*a*) The Deccan Lavas Region of the North-West
   (*b*) The Southern Region, including Mysore and part of Andhra Pradesh
   (*c*) The Nilgiri Plateau
3. The High Plains of Berar and Nagpur, between the Deccan Tableland and the Central Highlands

4. The Central Highlands (the Satpuras and the Chota Nagpur Plateau)
5. The Chhattisgarh Plain (chiefly the valley of the Mahanadi)
6. The Bastar-Orissa Highlands
7. The East Coast
    (*a*) north of the River Krishna
    (*b*) south of the River Krishna

### *B. Extra-Peninsular India*

8. The North-West Frontier Region
    (*a*) north of the Kurram Valley
    (*b*) south of the Kurram Valley
9. The North-West Dry Area
10. Gujarat
11. The Aravalli-Vindhya Ranges
12. The Indo-Ganga Plain, West
13. The Indo-Ganga Plain, East
14. The Delta Lowlands of Bengal, including the Surma Valley
15. The Assam Valley
16. The North-East Hill Tracts
17. The Sub-Himalayan Region
    (*a*) east of Hardwar
    (*b*) west of Hardwar
18. The Himalayan Region
    (*a*) east of the western boundary of Nepal
    (*b*) west of the western boundary of Nepal

As an example of the regional method in dealing with the geography of a state we may consider the natural regions of Kerala. These are :

1. The narrow coastal strip with backwaters and river mouths
2. The Lowland region between the coastal strip and the Ghats
3. The Highlands of the Western Ghats

Enough has probably been said to explain what is meant by the regional method and to indicate its value in teaching geography. It is not intended in any way to minimize the importance in geography of a knowledge of the more important political divisions, such as countries. Each important country should in fact be regarded as a separate unit and divided into natural regions. With regard to the less important countries some discretion is necessary and some of these may be grouped together for purposes of study, e.g. the states of the Atlas region or of the Guinea Coast or the Baltic States.

## VI

## THE COMPARATIVE METHOD

PSYCHOLOGISTS have emphasized the important part played in the assimilation of new ideas by the existing content of the mind. The mind tends to interpret the new in terms of the old. It is well, therefore, for the teacher, wherever possible, to bring the new ideas which he wishes to present into relation with the previous experiences of the pupils; in other words, to tack new knowledge on to old. This is the psychological basis for the pedagogical maxim: 'Proceed from the known to the unknown.'

Prompted by this idea the framers of geography courses usually begin the primary course with things that are familiar to the pupils, the school buildings and grounds, the village, the local river, the nearest railway line. From the pupil's home and from things that he can see with his own eyes his geographical knowledge is extended outwards to the district, state, country and continent. A sound knowledge of his home region provides a pupil with standards to which he can compare knowledge gained about other regions.

At the same time most courses today add a number of stories of children of other lands which contrast the home conditions and teach them side by side with the Home Geography. These stories are usually based on the main climatic regions of the world shown on p. 42. They can form a most valuable foundation for all the later geographical work, provided that the teacher always bears in mind the geographical facts on which his lesson is based and uses his story to teach them (see notes of lessons on pp. 138-43). All teaching of the subject needs to be based on that of the home region and the teacher should constantly refer to facts which the child may know but which he has failed to notice, e.g. the work of a river can be seen in any school compound after a shower of rain; waterfalls, meanders, undercutting, deposition, delta-formation, water-partings and the meaning of the term 'river basin' may all be taught in the field.

Some definite statistical knowledge about the home region, if only in round figures, is very desirable. A pupil should know the latitude and longitude of his home town or village, its altitude and the altitude of some neighbouring hills, its population and the population and area of the state. If a pupil in Jabalpur knows that the population of Jabalpur is approximately 3½ lakhs, population figures for other towns have a definite meaning for him, because he has a standard to which he can compare the figures.

Some definite knowledge of climatic statistics in the home region should also be given in order that climatic statistics of other places should become intelligible to the pupils. A metal box with straight sides may be placed out in the rain and the depth of the rain-water collected in it may be directly measured and the result compared with the record of a rain-gauge. In this way a pupil will understand what is meant by ten millimetres or a hundred millimetres of rain. From actual observation of a thermometer he should understand what temperatures of, say, 10°C., 25°C. or 40°C. feel like. He should know the annual rainfall of the place he lives in and the mean monthly temperatures of the hottest and coldest months. Climatic statistics will then acquire a definite significance to the pupil.

In the course of his teaching the geography teacher will find many occasions when a comparison of new knowledge with knowledge already acquired will assist pupils to grasp and retain the new knowledge. Let us suppose, for example, that the pupils have learnt about the west coast of India, the mountains running parallel to the coast in the path of the monsoon winds and the densely forested western slopes ; when they study the west coast of Burma, a comparison will bring out strikingly the points of resemblance. Incidentally a comparison of this kind not only facilitates the acquisition of new knowledge, but by recalling the old knowledge fixes it more firmly in the minds of the pupils.

Many other examples of profitable comparison of other countries with India will occur to the teacher. The monsoons of South-east Asia, China and North Australia invite a comparison with the monsoon of India. The relation of the river Po to the Alps is very similar to that of the river Ganga to the Himalayas. A good way of beginning the geography of China is to start with the fact that Canton is in the same latitude as Calcutta. The delta of the Si-kiang may thus be compared with the delta of the Ganga with its dense population and staple food crop of rice.

It may be well to note here that no two regions of the world are identical in every respect and that in comparing one region with another it is necessary to bring out, not only the points of resemblance, but also the points of difference. Thus we may point out that, as there are no very high mountains like the Himalayas to shut out cold winds from the north, the winter in the Si-kiang delta is cooler than in the Ganga delta.

A combination of the comparative and the regional methods results in considerable economy of labour. Certain regions of the world have the same kind of climate and may be expected to have the same natural vegetation, cultivated crops and modes of human life. We find, for example, on the western margins of continents, between the latitudes of 30° and 45°, regions of winter rain and summer drought, where the vine is a typical plant and where many kinds of fruits and cereals can be grown. This type of region is best known in the lands surrounding the Mediterranean Sea and so it is called the Mediterranean type. In other parts of the world we find regions of the Mediterranean type: in California, central Chile, the south-west extremity of Africa, the south-west of Western Australia and the south of South Australia. These regions may profitably be compared with the Mediterranean region and with one another.

In the same way, always remembering to point out differences as well as resemblances, we may compare the equatorial lowlands of the Amazon and the Congo basins, the deserts of Arabia and Sahara, the prairies of North America and the steppes of Asia, the coniferous forests of Canada and of Siberia.

The three southern continents, Australia, Africa and South America provide excellent material for comparison. For this reason they are often studied in the same year. South of the equator, each of these continents has a warm current on the eastern side, and a cold current on the western side. These currents tend to make the western side arid and the eastern side more productive. The south-east trade winds bring rain to the eastern side, fostering luxuriant plant growth in the coastal strips, and adequate moisture, at any rate for pastoral purposes, in the interior grasslands–the Australian downs, the South African veldt and the South American pampas. As they proceed further inland, the moisture in these winds diminishes and grasslands give place to deserts–the great Australian desert, the Kalahari desert and the Atacama desert. In each continent a great mountain range runs parallel to the coast–the Great Dividing range, the Drakensberg and the Andes–and the effect of these ranges on rainfall may be compared.

Comparison is often a good exercise for revision and consolidation of knowledge gained. Thus, after both Great Britain and New Zealand have been studied, the two may be compared. Both consist of two main islands nearly equal in size ; both have mountains in the west and plains in the east ; both lie in the region of westerly winds and have therefore more rain in the west than in the east ; both have an oceanic type of climate ; wheat, barley and oats are the chief crops in both. On the other hand, Britain is mainly an industrial country and New Zealand a pastoral and agricultural country.

Similarly North and South America may be compared. Each is triangular in shape. In relief the Rockies correspond to the Andes, the Appalachians to the Brazil and Guiana Highlands, the central plains are common to both. Each has great rivers flowing east, south and north. The St Lawrence has a counterpart in the Amazon, the Mississippi in the Paraguay-Parana, the Nelson in the Orinoco. North America, however, is broadest in the temperate zone and South America in the tropical zone. Hence the greater population and economic importance of North America.

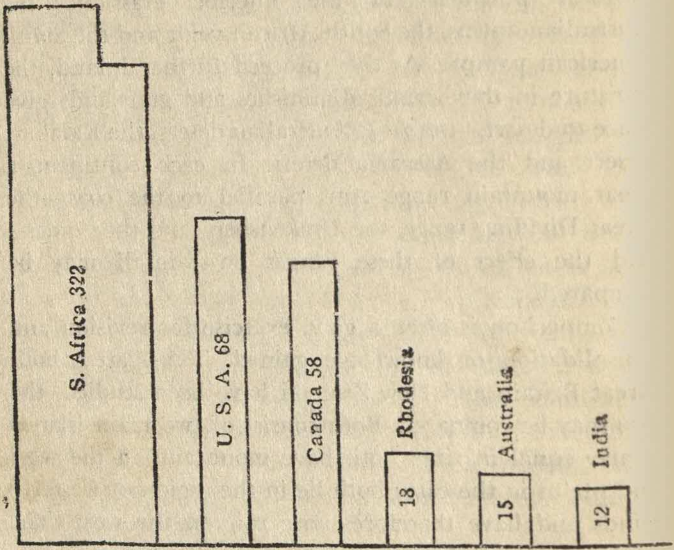


Fig. 16. Production of Gold 1928
(Kilograms, thousands)

Diagrams drawn on the blackboard help greatly in the quantitative comparison of products, etc., in different parts of the world. These diagrams may be easily drawn on a squared blackboard, or, with the help of a blackboard ruler marked in convenient divisions, on an ordinary blackboard. Fig. 16 is an example of the kind of diagram that may be drawn.

Diagrams of this nature can be given to the children to make for themselves from the statistics supplied in various Government publications and form a valuable exercise in the upper school. Care must however be taken to see that the pupils really make the comparison for themselves and understand clearly what the diagrams show.

## VII

# LEARNING FROM MAPS

No geography teacher will question the value of maps in geography teaching. Maps are in fact indispensable. They are required in the study of most topics of regional geography, such as position, relief, climate, natural vegetation, minerals, the distribution of population, towns, industries, communications.

Wall maps are required for use by the teacher in class. Physical maps of each of the continents and of India are essential. If the political divisions are marked in the physical maps, political maps are not a necessity, but they may be used in addition to the physical maps. In no case should political maps be used instead of physical maps. In addition to physical wall maps, wall maps illustrating such topics as climate, natural vegetation, distribution of population and commercial development are desirable. Philips' Comparative Wall Atlases is a good series, consisting of maps for each of the continents and for India. An excellent physical map of India is published by the Survey of India on a scale of 70 miles to an inch. This and excellent maps of different parts of India may be obtained from the Map Sales Office, 13 Wood Street, Calcutta, 16.

In addition to using wall maps the teacher must frequently draw sketch maps on the blackboard to illustrate particular points in his teaching. Almost every lesson requires illustration by one or more blackboard sketch maps. The teacher should be able to draw such maps rapidly and with as few lines as are necessary to show the particular point or points needing to be illustrated. If this is done much time is saved, as a clear sketch map will teach much more quickly than a long description. In this type of map great detail is not required and time should not be spent on it. Examples of such maps can be seen in chapter IV. Wall maps necessarily contain a large number of details and the teacher may want to focus the attention of the pupils on some particular details to the exclusion of others. He may wish, for example, to teach the natural regions of South America and have available only a wall map showing physical features, countries, towns and a number of other details. The teacher can best illustrate his lesson by drawing an outline map of South America on the blackboard and dividing it into natural regions. In this way he will present before his pupils a map showing exactly what he wants them to learn at the moment and no more.

In drawing sketch maps on the blackboard the outline often presents difficulty and takes up a great deal of time. It is advisable therefore to have available an outline of each of the continents cut out in tin or galvanized iron or three-plywood or cardboard, so that by holding it against the blackboard and running a piece of chalk round it the teacher can in a few seconds obtain an outline which he can fill in as he desires. In the case of countries, outlines may be drawn freehand, but time should not be wasted unnecessarily to get the outline perfect. For some sketch maps the outline is not required, e.g. in sketch maps of town sites, or routes, such as the Hudson-Mohawk Gap, or to show the relation between coal-fields and manufacturing towns such as those of West Yorkshire or the Bihar-Bengal region in our own country.

Atlases are essential, and every pupil must possess an atlas. The teacher must insist on this and accept no excuse. Excellent atlases are obtainable at very reasonable prices, e.g. Bartholomew's *Oxford School Atlas* and the *Survey of India School Atlas.* Atlases should be constantly referred to by pupils to locate physical features and towns mentioned in the textbook or by the teacher. The teacher should encourage the study of the atlas in class by frequently asking such questions as, 'Which are the chief rivers of France and in which direction do they flow? Find out from your atlases'; or 'In which parts of South America are the highlands and the plains situated?'

The use of the index for locating any place required should be taught in the middle school. This leads to much greater accuracy and saves much time later in the school course. At this stage it is worth while spending a good deal of time during class periods on work with textbook and atlas together. Unless this is done pupils will tend to use the textbook alone later on when preparing for examinations and time becomes precious.

In modern wall maps and atlases more importance is attached to relief than to political divisions and to areas of high and low ground than to mountain ranges. The comparative heights of different areas are generally shown by means of a series of colours, usually shades of green and brown. This system shows clearly at a glance the general relief of the whole area. The height of any particular part can easily be ascertained by reference to the key, or index, of colours which is always to be found near the margin of the map. The sea is usually shown in blue and the depth of water by different shades of blue. In this way the extent of the continental shelf is easily apparent.

Pupils should be given plenty of practice in drawing maps and sketch maps. Learning to draw from memory difficult outlines, as, for example, the continent of Europe, takes a great deal of time and this is not usually required by examining bodies. The outline of India is, of course, easy and every pupil should be able to draw this from memory. The outlines of other countries and of continents may be traced or drawn with the aid of stencils. Too much detail should not be shown on the same map. As a general rule, a separate map should be drawn to illustrate a separate topic. Thus, one map may be drawn to show relief, another to show the distribution of crops, another to show the distribution of minerals. If a map showing the distribution of crops is drawn on tracing paper, it can be superimposed on the relief map, and thus the effect of relief on crop distribution is clearly shown. Map drawing is a useful exercise for fixing some of the essentials of geography in the minds of the pupils by means of individual work and it is an exercise that may often conveniently be set for homework.

In setting maps to be drawn by pupils it is best to be quite definite about the details required to be shown. Vague orders, such as 'Draw a relief map of Africa', should be avoided. The following is an example of map work that may be done by high school pupils in the course of their study of Africa :

1. Draw a map of Africa. Shade all land over 600 feet. Mark the Atlas Mountains, the Abyssinian High-

lands, Mt Kenya, Mt Kilimanjaro, the Drakensberg Mountains, the Cameroons.

2. Draw a map of Africa. Show the four longest rivers and lakes Victoria, Tanganyika, Malawi and Chad. Insert the Blue Nile, the Atbara, the Sennar dam, the Aswan dam,. the six cataracts of the Nile, Juba, Khartoum, Cairo, Alexandria.

3. Draw a map of Africa showing the equatorial forests, the grasslands, the deserts and the 'Mediterranean' regions.

4. Draw to scale a map of the Suez Canal and insert Suez, Ismailia, Kantara, Port Said.

5. Draw a map showing the natural regions of Africa, south of the Equator.

6. Draw a map showing the chief railway lines of Africa south of the equator inserting Cape Town, Bulawayo, Victoria Falls, Elizabethville, Bukama, Port Elizabeth, Durban, Johannesburg, Pretoria, Beira, Salisbury, Dar-es-Salaam, Ujiji, Mwanza, Lobito Bay.

A very good method of teaching some things is to give an outline map and ask the pupils to fill in particular details. These can be duplicated on the school Roneo or Gestetner machine, or be made with the rubber stamps supplied by the Mapograph Co. or similar firms, or printed outlines may be bought. The advantage of the first method is that although it takes a certain amount of the teacher's time to draw the outline in the first place, he can be certain of getting exactly the area that he needs in the size that he wishes and in the quantity that he requires for a very small cost.

This type of exercise may be given quite early in the school course long before children can be expected to draw a map for themselves. The best way to teach the distribution of rainfall in India to the lower classes is to draw a simplified map on the blackboard and let the children copy it into a blank outline as the lesson proceeds. The usual climatic map as sold for wall purposes is far too complicated for a small child to understand, therefore the teacher must produce a simplified version, and if the children put into their own map first the area of heavy rainfall as the teacher explains it and puts it into the large one, then that with a lighter fall and finally the area with scanty rainfall, they will have learnt one of the most important factors in the geography of India and it will be a permanent possession.

Later in the school course this type of exercise may be used in teaching the correlation between climate, vegetation, crops and population: e.g. a middle or upper school class may be divided into sections and given an outline map of India. The first section will put in the Annual Rainfall, the next July Isotherms, the next January Isotherms, another the distribution of rice, another wheat, another jute, another cotton, another tea and another the density of population. When these are finished there will be several sets of maps which can be spread out amongst the class and the causal relationships between them discussed. For the method of making distribution maps see p. 66.

If any pupil wishes to paint his map, he need not be discouraged, but, if the painting is to be done well, it will occupy a good deal of time. Details of relief and of distribution can quite well be indicated by means of coloured pencils or by drawing lines neatly. The lines may be sloping, vertical or horizontal, or the whole area may be completely shaded. We can thus get a number of variations for illustrating distribution, e.g.

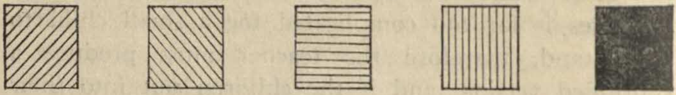


Fig. 17.

Combinations of these may also be used for showing relief as in the following diagram.

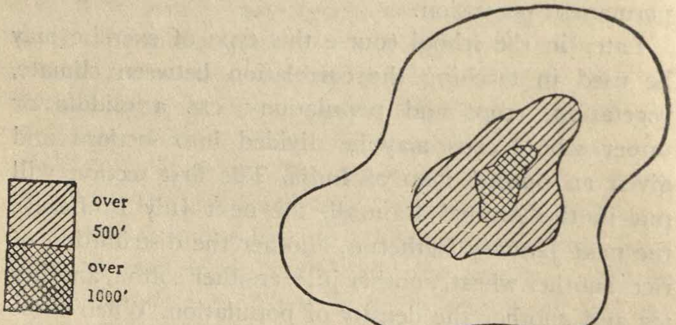


Fig. 18.

Whether shading or colouring is used it must be made clear, from the very first maps that are made in the lower classes, that lighter shading or lighter colours means less dense concentration of whatever distribution is being shown. In relief maps the highest land is shown by the darkest colour, in rainfall maps the heaviest rainfall is shown by the deepest shade or the densest cross hatching. Another most important thing, which is sometimes forgotten, is the necessity for the shades of colouring or hatching used to be correctly graded, each increase in density being shown by an increase in the depth of colour. It is where cross hatching is used that the greatest difficulty arises and the teacher should see and approve of the key before the child begins to make his map. Where colour is used the conventional ones should be chosen, shades of green, yellow and brown for relief, shades of blue and yellow for rainfall, shades of pink and purple for temperature. When distribution maps of crops or natural vegetation are being made the teacher may choose his own colours but the essential thing is to see that shades of the same colour, or at most two colours, are used in the correct gradation.

The following is a suggested course of map making throughout the school.

*The Lower School.*–Very simple maps of the classroom, the school compound, the way to school, without any attempt at accurate scale. Simple outline maps to be filled in not using more than three shades of colour.

*Middle School.*–More accurate maps of the neighbourhood with simple instruction on the meaning of scale. If time permits a small chain survey of a portion of the compound may be made to give the children some insight into the way that maps are made but too much time should not be spent on this.

More difficult outline maps to be filled in from data supplied by the teacher.

Simple sketch maps drawn at first as a blackboard summary of the lesson, later drawn by the individual children to illustrate particular points as suggested above.

Methods of making climatic maps from data supplied. Not too much time should be spent on this but no real understanding of an isotherm map can be expected until the children have plotted temperatures on a map and interpolated the isothermal lines for themselves. It is at this stage in the school course that it is possible to spare time for this more or less mechanical work.

Similarly the methods of making distribution maps from given data should be taught at this stage. The data can be obtained from many Government publications but the teacher must reduce the figures to percentages himself and also choose the points of gradation when making the key. Supposing that a map showing the area under rice sown in each state is to be made, the teacher will first find what figures are available, then decide whether he will show the percentage of the total area sown in each state which is put under rice, or whether he will show what percentage of the total area under rice in India is sown in each state. Since more than one crop a year is obtained in some states and not in others the first is likely to be the more useful. He then reduces these figures to a percentage and finally chooses his scale of colouring.

The following table showing the areas sown under rice in the Union of India is derived from the official *Statistical Abstract, India*, for 1968, issued by the Government Statistical Organisation, Department of Statistics. Each unit represents a thousand hectares.

When deciding on the gradations of the key it is necessary to consider the amount of detail that is required at the stage reached. If it is desired to show only those areas which grow most and least rice three shades of colour are sufficient and we should colour alike those which put less than one-tenth of their land under rice one shade, more than one-half a much deeper shade

| *State*<br>(1) | *Area under rice*<br>(2) | *Total cropped area*<br>(3) | *Col. 2 as a percentage of Col. 3* |
|---|---|---|---|
| Andhra Pradesh | 3,508 | 12,091 | 29.0 |
| Assam | 2,154* | 2,779† | 77.5 |
| Bihar | 5,248 | 10,760 | 48.5 |
| Gujarat | 514 | 10,061 | 5.1 |
| Haryana | 216 | — | — |
| Jammu & Kashmir | 226 | 857 | 26.2 |
| Kerala | 804 | 2,551 | 31.5 |
| Madhya Pradesh | 4,245 | 17,786 | 23.8 |
| Madras | 2,763 | 7,066 | 37.7 |
| Maharashtra | 1,408 | 18,975 | 7.2 |
| Mysore | 1,168 | 10,398 | 11.2 |
| Orissa | 4,308 | 7,446 | 57.7 |
| Punjab | 295 | 9,395 | 3.1 |
| Rajasthan | 95 | 14,971 | 0.6 |
| Uttar Pradesh | 4,359 | 22,074 | 19.7 |
| West Bengal | 4,720 | 6,391 | 73.8 |
| Andaman & Nicobar Islands | 7 | 10 | 70.0 |
| Delhi | 2 | 100 | 2.0 |
| Goa, Daman & Diu | 44 | 139 | 31.6 |
| Himachal Pradesh | 97 | 444 | 22.1 |
| Manipur | 174 | 174 | 100.0 |
| Pondicherry | 31 | 46 | 67.4 |
| Tripura | 252 | 332 | 75.9 |
| All India | 36,638 | 154,846 | 23.6 |

* (+NEFA)
† (—NEFA)

and all the rest an intermediate one. This is quite suitable for the lower classes of the middle school. It brings out quite clearly that the dry area of the north-west is unsuited to the growth of rice and that the delta lands of Bengal and the exceptionally wet Assam Valley are those most suited to the growth of rice. It also shows that the importance of rice as a crop decreases

up the Ganga Valley. Later in the school course, when the pupil's power of reasoning has developed further, a more detailed map may be made. A suitable gradation would be areas putting less than 10% under rice the lightest shade, then in progressively deeper shades
areas with 10% to 19% under rice
20% to 29%
30% to 39%
40% to 49%
50% and over the darkest.

When using this scale, in addition to the three facts learnt above, a more detailed gradation of the Ganga Valley is shown, the importance of the delta lands of Orissa and Tamil Nadu in providing suitable land for rice production is indicated and the comparative unsuitability of the plateau, as represented by Mysore and Madhya Pradesh and a large part of Maharashtra, for the cultivation of rice is brought out. It is in the making of such maps as these that it is of primary importance to see that the colours are properly arranged in increasing depths of shade. If cross hatching is used those shown below would be suitable.

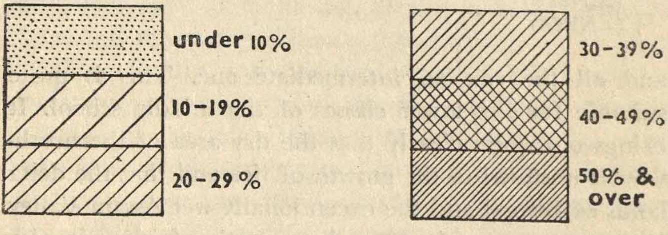


Fig. 19.

*Upper School.*—Increasingly difficult maps of all the types done so far. Much practice should be given in the drawing of sketch maps illustrating special points of the lesson and the pupils should be encouraged to make their own notes and summarize the lessons given by entering the chief points of an outline map. Not every point of a lesson can be entered on a map but it is surprising how rapid and complete a summary can so be made.

It is essential that the pupils should be able to read maps. When they look at a map they should be able, not only to see a map, but to visualize the piece of country represented by the map. For this reason map work generally commences in the primary school with maps of the classroom, the school, the school compound and the village or the surroundings of the school. In this way maps are related to places actually familiar to the pupils and the relation of the map to the place mapped is grasped by the pupils. Even when this is done it is generally found that pupils require a good deal of help in the reading of a map. This should begin with the understanding of a wall map in the lower classes. It is a good thing to require the pupils to give the main points shown by any map without looking at the key, once they have grasped the meaning of the colours used. For example, in the lower classes lessons should be given on reading the ordinary relief map of India. The main structural divisions, high mountain, plateauland and plain can be seen at once. Later it may be necessary to look up in detail the height of a particular area, and for that children must be taught to use the key ; but that comes later. Where possible, pictures should be used alongside maps. For example, if the relief map of North America is being studied, at the same time show the pupils pictures of the Rockies, Great Lakes, and Prairies, so that physical features marked on a map may come to have some real meaning, and the land can be visualized as it really is.

In the middle school much more time should be given to interpreting the maps produced by the class than is given to their marking. At this stage it is profitable to teach the correlation of relief, climate, vegetation, crops and possibly population by comparison of a series of maps. Generally speaking the wall maps supplied by the firms for this purpose contain too much detail for middle school children to understand and it is worth the teacher's while to make his own as suggested above.

In the upper school every child should have an opportunity of studying and learning to read the one-inch map of his own area, and if there are some pupils who are going to take up geography as a special study they should study typical sheets from different parts of India. In connexion with this work expeditions should be arranged so that the children can compare the features shown on the map with the actual structures in the field. The representation of height by contours always seems to cause difficulty unless the children have been able to compare the shape of an actual hill, valley, saddle, scarp with that shown on the map. Some work can of course be done with models and much can be done with miniature hills and valleys carved by the last shower of rain or the local stream. The weather map is another type which should be read by pupils at this stage, but too much time should not be given to it.

A detailed knowledge of map projections is not required in schools. Pupils should, however, be made to realize that every map must be inaccurate to some extent, either in shape or area, because it is impossible to represent accurately the surface of a globe on a flat piece of paper. Some idea of conical and cylindrical projections may be given by fitting a paper cone and a paper cylinder to a globe. A candle and a globe consisting of two wire hemispheres will be found useful in teaching projections. To correct wrong impressions that may result from studying geography constantly from a flat map a globe should be frequently referred to and may be kept constantly in view in the geography room.

## VIII

## THE GEOGRAPHY ROOM AND APPARATUS

For the efficient teaching of geography a good deal of apparatus is required and it will be found most convenient if a separate room is allotted for geography also and suitably equipped. This creates a favourable atmosphere for geography teaching and avoids the waste of time and damage involved in moving about maps, pictures and apparatus from one classroom to another.

Instead of discussing an ideal geography room it seems preferable to describe a geography room that has actually been fitted up—that at Spence Training College, Jabalpur. The dimensions of this room are 30 × 25 feet. The wall on the west side is blank and the wall on the south side has two recesses in which are placed cupboards. The north wall has two doors and two windows and the east wall two doors and one window. On the west side the blackboard runs the whole length of the wall. In addition to the wall blackboard there is a movable squared blackboard which is useful for drawing graphs. In front of the blackboard are the teacher's table and chair and a movable stand for the display of maps.

Below one end of the blackboard against the wall is a low cupboard, 3 feet high, 3½ feet long and 2 feet wide, in which are kept the lantern and other apparatus for projecting pictures. Below the other end of the blackboard is another cupboard, 3 feet high, 6 feet long and 1 foot wide. This has sliding doors fitted with wire netting and on its shelves are specimens of local rocks such as granite, basalt, sandstone, limestone, marble and clay. Below the blackboard and between the two cupboards hang the stencils of the continents cut out in tin, galvanized iron or three-ply wood. With the aid of one

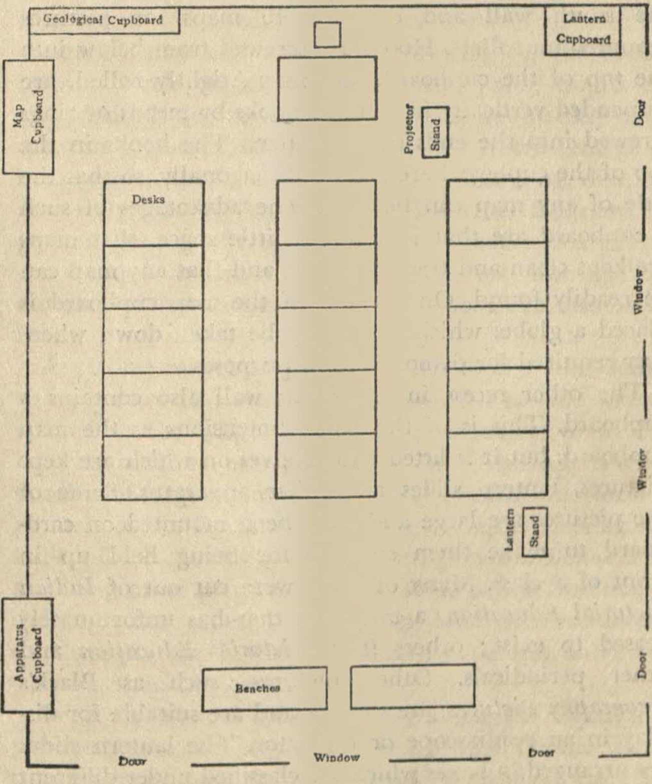


Fig. 20. THE GEOGRAPHY ROOM IN SPENCE TRAINING COLLEGE, JABALPUR.

of these stencils the teacher can quickly draw the outline of any continent on the blackboard.

The map cupboard ($5\frac{1}{2} \times 4\frac{1}{2} \times 1\frac{1}{2}$ feet) is in a recess in the south wall and contains 40 maps, or pictures mounted on rollers. Hooks are screwed from below into the top of the cupboard, and maps, tightly rolled, are suspended vertically from these hooks by means of rings screwed into the ends of the rollers. The hooks in the top of the cupboard are arranged diagonally, so that the title of any map can be seen. The advantages of such a cupboard are that it occupies little space, that maps are kept clean and free from dust and that any map can be readily found. On the top of the map cupboard is placed a globe, which can easily be taken down whenever required for demonstration purposes.

The other recess in the south wall also contains a cupboard. This is of the same dimensions as the map cupboard, but it is fitted with shelves on which are kept pictures, lantern slides and other apparatus. Some of the pictures are large and have been mounted on cardboard to make them suitable for being held up in front of a class. Many of these were cut out of *Indian Pictorial Education*, a magazine that has unfortunately ceased to exist; others from *Pictorial Education* and other periodicals. Other pictures, such as Black's *Geography Pictures*, are smaller and are suitable for display in an epidiascope or projector. The lantern slides are arranged in boxes which are classified under different heads.

Among the other articles kept in this cupboard may be mentioned the orrery, which is useful in teaching the astronomical part of geography; the mapograph, by the aid of which maps of the continents can be rapidly duplicated for the use of pupils; and a wire globe, which is useful in teaching map projections. A circular blackboard protractor is also kept here. This simple instrument was made of wood in the college manual training centre and is used for drawing on the blackboard a circle on which the equator, poles, tropics or any desired degree of latitude can be quickly and accurately marked off. Another simple instrument, also home-made, is a blackboard ruler, 2½ feet long, divided into 100 parts. With the help of this ruler diagrams of percentages, e.g. of crop production, exports and imports, can be quickly drawn. Small stencils for drawing the outlines of continents in exercise books are also kept here.

A picture rail runs just above the tops of the doors and windows all round the room, except for the whitewashed square which is used as a screen on to which lantern pictures are projected. On this rail rest a number of large pictures of different parts of the world: pictures of the Egyptian desert for example, of Niagara Falls, of the Houses of Parliament, London. Below the rail hang other pictures and also some of the best maps drawn by the students. These maps have been mounted on three-ply wood, which is durable and less liable to warping than cardboard.

Some schools and colleges may find that a display of pictures above the picture rail is too high for the illustrations to be seen clearly and easily. In these cases it would be better that a sheet of ordinary cardboard or hessian should hang against one of the walls, and on this, maps, pictures and diagrams could be pinned.

If the object of geography teaching is to enable pupils to visualize environment and human life in different parts of the world, it is obvious that pictures should play an important part in geography teaching. Holding up large pictures before a class is useful, but often all the pupils cannot see all the details sufficiently clearly. Passing small pictures round a class takes a long time and the pictures soon become dirty and damaged. The most effective way of showing pictures to a class is by projecting them on to a screen either through slides, as in a magic lantern, or from the pictures themselves by means of an epidiascope or projector. To do this in the daytime the room has to be darkened. To keep out the bright sunlight in an Indian classroom is not easy, but it can be done.

To enable the geography room in the Spence Training College to be darkened, the doors are fitted with wooden panels instead of glass panes, and dark curtains are fitted to the windows. The clerestory windows have been removed and black tin sheets fixed in their place, one overlapping the other, so as to admit air but not light. To diminish the amount of reflected light, the walls are colour-washed except for a whitewashed patch eight feet square, which serves as a screen for lantern pictures. By shutting the doors and windows and pulling the curtains the teacher can in a few seconds darken the room sufficiently for projecting pictures. It may be objected that shutting doors and windows obstructs ventilation, but, as the room is fairly large and as the time devoted to projecting pictures is usually limited to about 10 or 15 minutes, which is generally ample to illustrate any particular lesson, little harm can be done.

One means of projecting pictures from slides is the ordinary magic lantern. As a screen for the pictures a whitewashed part of the wall above the blackboard serves very well and there is no need to fix up a cloth screen. A stand, about 4½ feet high, is placed about 20 feet from the screen for the lantern. Illumination for the lantern is obtained by electricity from a plug in the wall. Where electricity is not available, acetylene gas may be used, but the gas takes time to prepare and is liable to create an unpleasant smell.

Reflecting sunlight from a mirror is another and very simple means of providing illumination for projecting pictures through slides. To utilize sunlight a lantern is not necessary, only a slide carrier and a lens carrier, fitted with an ordinary converging lens, being required. These are placed on the stand about 20 feet from the whitewashed wall. A beam of sunlight is reflected from a mirror placed outside, through a door, through the slide and the lens on to the wall. In order to keep out light that is not required it is best to fit the door with a dark curtain containing an adjustable aperture ; otherwise, only so much of the door may be opened as is necessary. An ordinary plane mirror is used, its bevelled edges being pasted over with black paper. As the sun moves, the mirror has to be adjusted from time to time. Focusing is effected by adjusting the distance between slide and lens. To obtain any required angle of elevation the slide and lens carriers are fitted on a grooved platform which can be tilted by means of wooden blocks placed under it. The platform and the slide and lens carriers are made of wood one inch thick and are of the following dimensions :—platform, 1 ft. 9 in. × 10 in. ; slide carrier, 11 in. × 10 in. ; lens carrier, 10 in. × 6 in. A large sheet of cardboard is fitted over the lens carrier to keep off superfluous light. This simple contrivance was designed by Professor N. N. Mitra of Spence Training College.

An epidiascope is an instrument which provides at will either diascopic projection through slides, as in an ordinary lantern, or episcopic projection from opaque objects such as pictures. Most instruments used for projecting pictures from opaque objects are epidiascopes, but that used in Spence Training College, Evans's Universal Projector, gives episcopic projection only. It is effective and much cheaper than an epidiascope. Electric current is required for the illumination of an epidiascope.

To project maps, diagrams and pictures in which lateral inversion would be a disadvantage this projector is placed in a corner of the room on the lantern cupboard and a portable screen is placed between the projector and the class. A paper screen will serve, but a specially prepared screen is much more effective. To project pictures in which lateral inversion is no disadvantage the best method is to place the projector on a stand 6 feet from the blackboard and to tilt it upward so that the beam is thrown above the blackboard on to a screen tilted slightly downwards to receive the beam normally. The screen in this case is made of whitened cloth, 3 feet × 3 feet, stretched tight in a wooden frame.

The observatory, in which observations of the weather are made, is situated out of doors and may be considered an adjunct of the geography room. It is a small plot enclosed by a railing and contains a rain-gauge and a Stevenson screen. The Stevenson screen is a box raised 4 feet above the ground and constructed so as to admit air freely but to keep out rain and the direct rays of the sun. It contains the maximum and minimum thermometer and the wet and dry bulb thermometer. The barometer is kept in the science laboratory, and the wind-vane on top of the college building. Each day the students in their turn take the usual observations of the weather and these are posted on the Weather Report board together with the Daily Weather Map published by the Meteorological Department.

INSTITUTE OF EDUCATION FOR WOMEN
Dept. of Extension.
SERVICES
CALCUTTA-27 ★

## IX

## INDIVIDUAL WORK

Lecturing as a method of teaching is quite out of place in a school, however suitable it may be in a university. Even in universities the minds of students have been known to wander away from the subject of the lecture long before the lecture period is over. Recognizing the ineffectiveness of lecturing, all school teachers, except the inexperienced and the unintelligent, enliven their oral teaching with questions, in order to keep the minds of their pupils alert, and with blackboard summaries and illustrations in order to appeal to the pupils' interest through the sense of sight. Even so, the results of oral class teaching are often very unsatisfactory and the pupils seem rapidly to forget a great deal of what the teacher has taken the trouble to teach. Vivid descriptions, especially if accompanied by pictures, will make some impression on pupils' minds, but too much reliance on ' descriptive geography ' leaves the pupils ' minds in a very confused and hazy state.

The question arises how far oral class teaching is satisfactory and whether it should not be replaced, at any rate to a great extent, by something better. Supporters of the Dalton Plan give a very emphatic answer to that question. They think that oral class teaching should be reduced to a minimum and that the bulk of the work should be done by the pupils themselves with the aid of books and apparatus, answering questions set and doing work assigned by the teacher. The knowledge gained by a pupil in actively searching out something for himself is, they claim, far more firmly implanted in him than the knowledge gained by listening passively to a teacher. The importance of individual work is generally recognized in mathematics and science and in these subjects pupils do individual work by solving problems for themselves and performing experiments. More individual work in geography also than is usually done seems very desirable.

Homework is excellent, because pupils have to do this for themselves ; that is, unless some kind, but misguided, friend helps them, or an unwise parent employs a private tutor to do it for them. Homework should be regularly set and regularly exacted. Trite excuses such as 'I left my book at home' and 'I was not feeling well yesterday' should never be accepted. Homework not produced at the right time should be produced on the next day with an added penalty. In setting homework it is desirable to be very definite, so that no pupil may have any doubt about what is required. Drawing maps to illustrate particular topics is a useful exercise for homework.

No one, not even the most enthusiastic supporter of the Dalton Plan, wishes to do away with oral class teaching altogether. The problem is how much time to devote to oral class teaching and how much to individual work by the pupils. In view of its greater value it seems desirable that the greater part of the available time should be devoted to individual work. To allot all school time to oral and all homework time to individual work is to ignore the relative values of the two kinds of work. In addition to homework time some school time also should be devoted to individual work.

It is probably not too much to say that, when the subject matter is fairly easy, 50 per cent of the school time available for geography should be devoted to individual work and 50 per cent to oral class teaching.

Thus, if two periods are devoted to the East Coast Strip of peninsular India, one period may be devoted to individual work and the other to oral class teaching. In the first period questions may be set to be answered in writing with the aid of the textbook and atlas. The questions should be carefully chosen so as to necessitate intelligent reference to the textbook and atlas and should require short answers that can be easily corrected. If possible, the questions should be cyclostyled to avoid waste of time in dictating questions or writing them on the blackboard. In the second period the teacher may supplement the first lesson by means of oral descriptions, pictures, and questions, and may deal with items that have not been covered in the first lesson. Some examples of assignments for individual work are given below. The portion of the textbook referred to may be read as homework before the class period.

### I. PENINSULAR INDIA : TAMIL NADU and ANDHRA PRADESH

(Refer to Stamp, *The World,*[1] pages 137-140)

1. What is the annual rainfall in each of these States? In what months is the rainfall heaviest?

2. What important irrigation areas are there in these two States?

3. A railway has been built from Raipur, Madhya Pradesh, to a port on the East Coast where a harbour

---

[1] L. Dudley Stamp. The World : a general geography for schools in Asia. 10th edition 1958. Orient Longmans.

has been constructed. Name this port. Has Madras a natural or an artificial harbour?

4. What are the chief crops in these regions?

5. Draw a map of the two States, shading the highlands and showing the deltas of the Godavari, Krishna and Cauvery and the towns of Madurai, Tiruchirapalli, Madras, Tuticorin, Pondicherry and Vishakhapatnam.

## II. CEYLON

(Refer to Stamp, *The World*, pages 153-7)

1. State the area and population of Ceylon.

2. From your atlas draw a map of Ceylon shading the land over 500 metres. Insert Colombo, Kandy, Jaffna, Galle, Trincomalee and Talaimannar.

3. Give the following figures for Colombo:
Distance from the equator in degrees; mean temperature for January; mean temperature for May; the annual and daily range of temperature.

4. Does Ceylon receive its rainfall from the south-west or the north-east monsoon? Why does the northern part receive less rainfall than the other parts?

5. Divide Ceylon into three natural regions.

## III. BURMA (2 periods)

(Refer to Stamp, *The World*, pages 146-153)

1. Draw a map of Burma inserting the Arakan Yomas, the Shan Plateau, the Pegu Yomas, the rivers Irrawaddy, Chindwin, Salween, Sittang.

2. Which of the rivers of Burma are navigable and how far?

3. In what parts is teak found?

4. What is the population of Burma? What is the religion of the Burmese? Where do the Chins, Karens and Kachins live?

5. Draw a map showing the seven natural regions of Burma.

6. What is the rainfall in the Arakan and Tennasserim coastal strips? What is the chief town in each of these regions? Where is tin found?

7. What is the chief town of the Shan Plateau? What other kinds of town are there in this region? On what railway line is Maymyo? Where are the silver and lead mines and where is the ore smelted?

8. State the rainfall, the chief town and the most important industry of the dry zone.

9. Which is the most densely populated and most intensively cultivated region? What is the chief crop in this region?

10. Draw a map showing the importance of the position of Rangoon and the railways to Prome and to Mandalay.

11. Where are rice, timber, tea and oil produced in Burma? By what means do these commodities reach Rangoon?

## IV. ITALY

(Refer to Pickles, *India, World and Empire,* pages 226-8)

1. Draw a map of Italy and Sicily, shading the Alps and the Apennines and showing the rivers Po, Tiber, Arno. Insert Rome, Genoa, Turin, Milan, Venice.

2. In what respects can you compare the Plain of Lombardy with the plain of the river Ganga?

3. What are the chief agricultural products of Italy?

4. In what part of Italy are large factories situated? What are the chief manufactures of Turin, Milan, Como? As Italy has little coal, how does she obtain power for her factories?

5. Where is sulphur found?

6. Name the chief Alpine passes and tunnels and the towns that guard them.

7. Venice and Genoa were very important ports in the Middle Ages. What discovery led to their decline?

## V. NEW ZEALAND

(Refer to Scudder, *Living and Earning a Living,* Bk. I, pages 99-106. *The Oxford School Atlas,* 1968, page 43)

1. Look at the map on p. 43 of the atlas and answer the following questions :–

What are the names of the three islands which form New Zealand? How far are they from Australia? (Measure with the scale at the bottom of the map.)

Which line of latitude passes through New Zealand on this map? Is there any part of India which lies as far away from the equator as New Zealand? (Look at the lines of latitude on page 32). Where is the highest land in New Zealand?

2. Read pages 99-101 in your textbook and answer the following questions :–

Who lived in New Zealand before the British went there? How did they earn their living?

In which part of New Zealand do we find glaciers? Why do we find them here?

In which part of New Zealand do we find hot springs? How do the people use them?

3. Read page 102 of your textbook and answer the following question. Make a list of the differences between New Zealand and Britain. Which side of New Zealand gets the most rain? Why is this?

4. Trace the map on page 103 into your book.

5. Read the rest of the chapter. Then write into the map you have just traced the words SHEEP and CATTLE where each of these are raised in New Zealand.

Beside the following ports write the name of the chief export: Wellington, Auckland, Christchurch, Lyttelton.

6. Look at the picture on page 105 and answer the following questions. How many cows can you see? How many men? How are the cows kept steady in their stalls? Why are the cows milked indoors? Make a list of all the things that the New Zealand dairy farmer will have to buy before he can use this method of milking his cows. Try to think out what advantages he gets by this method which makes it worth his while to pay out all the money first.

7. Look at the table of exports and imports shown on page 106 and say which of these come under the heading of 'Dairy Produce'. Try to say why New Zealand exports foodstuffs and imports clothing and machinery.

Assignment V is meant for a middle school class and is therefore given in detail. All these questions can be answered by the average first form child who has been taught to read a book intelligently and to use an atlas.

This work should be done in class so that the teacher can see that time is not wasted and can give a helping hand if the child is in difficulties, but after a few lessons of this type he should not need to give much help. After the child has found out all he can by himself in this way the teacher should give an oral lesson gathering up all that has been learnt into a systematic whole.

INSTITUTE OF EDUCATION FOR WOMEN * CALCUTTA-27 *
Dept. of Extension. SERVICES

## X

## LEARNING FROM PICTURES

THE teacher should use pictures as much as possible for individual work. He will find that at first the child is quite unable to see what is shown. He will need to point out the salient features of each picture until the child learns to find these for himself. In choosing pictures for use in the geography lesson the teacher may go to many sources but he must be sure that each one does show some geographical point.

Any of the pictures in this book could be usefully employed in individual work. The first set shows varieties of land forms. The following questions could be given and the child asked to answer them in writing :–
Plate I. *The Himalayas seen from Leh, Ladakh*

(*a*) Find Leh in your atlas.

(*b*) Look at the picture and say which are the Himalaya mountains. How do you know ?

(*c*) Look at the map and picture together. Which side of the Himalayas (north or south) do you see in the picture ?

(*d*) How many parallel ranges do you see in the picture ? Which of these is the highest ? How do you know ?

(*e*) In which river valley does Leh lie ? How high above sea level is the flat land that you see in the picture ? (Use your atlas to find the answers to these questions.)

(*f*) Where do you see trees in the picture ? Why are they only found in this place and not on the slopes of the mountains ?

(*g*) What do you suppose is growing in the fields ? How does the farmer get his water for these fields ?

(*h*) Look at the houses. Why do they have flat roofs ?

(*i*) What do the people do for a living ? What do they buy and what do they sell and where do they sell it ? Your atlas will help you to answer these questions.

(*j*) During what time of the year was this picture taken ? How do you know ? (Look at the trees.)

*Notes for the Teacher*

This is a very good picture showing the structure of the mountain wall of North India. The snow mountains in the right-hand corner are the Himalayas seen from the north, or dry side. There is a parallel range, lower and therefore not snow-covered, in front of the high range. In front of that there is the main longitudinal valley of the Indus, and nearest the camera spurs of the Ladakh Range. The picture was taken in the early summer since there is no snow on the valley floor or even on the nearer slopes and the trees are in leaf, but there is no crop in the fields, which have obviously just been ploughed ready for sowing. There is no vegetation on the slopes, which shows how dry the whole area is and that the fields on the flat valley floor must depend on snow-fed streams for irrigation. The flat-roofed houses are another indication of the dry nature of the climate. The Himalayas rise so high above the plain that they cut off the rain-bearing monsoon from this sheltered valley to the north. The valley itself is 3522 metres above sea-level and separated from India by high mountains and difficult passes so that the farmer grows food for himself and has very little trade with the outside world. During the winter months he is cut off entirely, but during the summer some trade is carried on with the rest of Kashmir, the goods being sent by means of pack animals. The outgoing trade is mostly in skins of sheep which feed on any herbage which can be found on the hill slopes and the ingoing trade is in small comforts which the more civilized parts of the Kashmir Valley can obtain but which are inaccessible to these remote, high valleys except by this method.

Plate II. *The Lauterbrunnen Valley*

(*a*) Find this place in your atlas. It is in Switzerland.

(*b*) What are the mountains in the background ?

(*c*) Why are parts of them covered with snow and other parts not ? (Look at the slopes which are not covered to answer this.)

(*d*) What shape is the main valley ? Draw a rough section of it. What do you know about the formation of valleys which have this shape ?

(*e*) Find a waterfall in the middle background. Where does this water come from ? Look up the meaning of 'hanging valley'. This is one. How was it formed ?

(*f*) What are the dark-coloured trees and where do they grow ? What does this tell you about the height of this part of the valley ?

(*g*) What are the lighter trees in the foreground ? What do they tell you about the time of year when the picture was taken ? What else is there in the picture which tells you this ?

(*h*) Who is likely to live in the house which you see in the foreground ? What is the house likely to be made of ? What shaped roof does it have and why ?

*Notes for the Teacher*

This is an excellent picture of a U-shaped ice-eroded valley. See diagram below. The snow-covered mountains in the background are the Alps. The steep precipitous slopes of these mountains are free from snow but the more gentle ones are snow-covered. In the middle background can be seen the gentle slope of the original river valley with a stream crossing it and descending to the over-deepened, ice-eroded valley of today by a waterfall. This is a ' hanging valley '. It is necessary to make clear to children that the deepening of the original river valley was done by the ice of a previous age. The valley still fills with snow in the winter time but, as in the picture, it is completely free of snow and ice during the summer

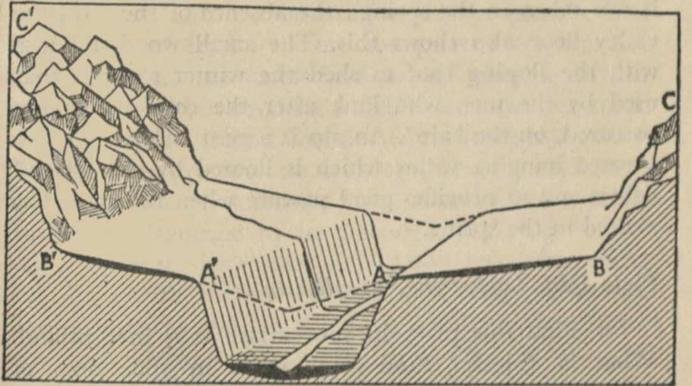


Fig. 21. SECTION OF A U-SHAPED ICE-ERODED VALLEY

The dotted line AA′ shows a pre-glacial valley before it was over-deepened by the passage of a glacier. BC, B′C′ are the mountain slopes which rose above the glacier; AB, A′B′ are the shelves now covered with glacial debris, forming pastures—called alps. Streams fall over A and A′ into the main valley.

months, permanent snow being restricted to the colder higher mountain slopes above. The black coniferous trees show that the picture was taken at a comparatively low level and the flowering fruit trees in front show that it was taken in the spring; the absence of snow on the valley floor also shows this. The small wooden house with the sloping roof to shed the winter snow is that used by the men who look after the cows which are pastured, on the 'alp'. An alp is a gently sloping, grass-covered hanging valley which is floored by rich glacial debris and so provides good pasture when the snow has melted in the spring.

Plate III*a*. *Loch Fyne, Argyllshire*

(*a*) Find this place in your atlas; it is in Scotland. What is a loch? Find some more in your map of Scotland.

(*b*) What do you notice about the level of the hills in the picture? Compare the hills here with the mountains in picture I. What do you notice? Compare them with those in picture II.

(*c*) What shape is the valley in the foreground? Compare it with that in picture II. Do you see any reason to suppose that these two valleys have been formed in the same way? What is the chief difference between them? Can you suggest which of these two valleys is the older? Why?

(*d*) Find the river in the picture. Describe its course to the sea. Through what kind of land does it flow?

(*e*) What kind of vegetation do you see on the slopes? What do you think it could be used for?

(*f*) Which part of the country shown is cultivated? Why is the other part not cultivated?

*Notes for the Teacher*

This is a typical picture of a Sea Loch or Fjord of the west coast of Scotland. The whole area has been subjected to denudation for countless ages until it is almost level. This is clearly shown in the picture. The final agent of erosion before the present age was the ice sheet, which has scraped all the soil from the surface leaving only a thin covering which is sufficient to support a vegetation of heather but not enough for cultivation. The heather provides poor sheep pasture only. Earth movements have cracked the old surface and these cracks have been deepened by ice ; hence the U-shape of the valley. After the ice retreated the lower end of the valley was filled with the sea, making a winding, steep-sided narrow inlet as seen in the picture. The stream which now occupies the bottom of the upper part of the valley winds over its flat floor depositing alluvial soil and pushing this out further into the waters of the loch each year. The fan-shape of the delta so formed can just be seen in the picture. This is the only part of the area which can be cultivated. The smooth, rounded plateau surface is in great contrast to the sharp pointed mountain ranges of picture I. This gives a very good idea of the age of the two areas. The Himalayas are young while this Scottish plateau is old and has been worn down by continuous denudation till there are no sharp pointed surfaces left. In comparing it with the picture of the Lauterbrunnen Valley the same thing can be seen : the Alps are young and the high peaks are so rugged that snow will not stay on their slopes in places. At the same time it is clear on comparing the two pictures that ice has eroded both the valleys causing the characteristic U-shape. In the Alps the ice sheet covered it when it was young but in Scotland the land had been worn down to a peneplain before the Ice Age.

Plate III*b*. *The Welsh Uplands*

(*a*) Find Wales in your atlas.

(*b*) Look at the slopes of the hills. Are they steep or comparatively gentle ? Look at the tops of the hills. What do you notice about the general level ? What do these two things tell you about the age of these hills ?

(*c*) Find the river. Is this the upper, middle or lower course ? How do you know ? What shape is the valley ?

(*d*) What is the vegetation on the hill-sides ? How far up the hill-sides are they covered with vegetation ? Compare with the previous picture. Can you draw any conclusion about the structure and formation of this valley ?

(*e*) Look at the men. What are they doing ? Why do they have dogs with them ? What is the extra coat on their backs ?

(*f*) What are the white animals ? How do they differ from similar ones in India ? Where do they feed ?

*Notes for the Teacher*

This is a typical Welsh valley. That the whole area is old is shown by the comparatively gentle slopes and the generally level tops of the hills as compared with the young mountains of the Himalayas or Alps. The valley is V-shaped and therefore has not been deepened by ice but cut by the stream seen in the floor of the valley. This river is in its middle stage. There is good vegetation cover, mostly grass but some low-growing shrubby plants as well, probably heather, right up to the top of the hills. This is evidence that there is more soil than in the previous picture, which again is evidence that it has not been ice-eroded. The men are driving sheep down the valley with the help of sheep-dogs, which are used to keep the flock together and keep them in the right path. The men are carrying extra coats, almost certainly rain-coats to protect them from the rain which so often falls in these hills of western Britain. It is this constant rainfall which keeps the hill-sides always green with grass. Sheep are the animals which are most useful here as they do not mind the slopes. Although it is generally true that sheep are kept on the drier lands throughout the world, the slope of the hills in Wales is such that the water runs away quickly enough not to hurt the animals. The colder climate of Britain causes the sheep to be covered with the thick wool which can be seen on these animals, in contrast to the hair which covers most of the sheep in India.

Plate IV*a*. *Fuji*

(*a*) Find this mountain in your atlas. It is in Japan.

(*b*) Look at the mountain. What shape is it ? Does this tell you anything about the way it was formed ?

(*c*) Why is the top of the mountain covered with snow ? How high is it ? Find this from your atlas. Would mountains of this height have snow on them in India ? What is the cause of the difference ?

(*d*) Compare this picture with that of the Himalayas. What difference do you see ?

(*e*) What kind of trees do you see in the foreground ? What do they tell you about the climate of this part of Japan ?

*Notes for the Teacher*

This very clear picture of a volcano has been chosen because so many children have but the vaguest idea of what a volcano is, having seen nothing but a diagram of its structure. It is also a good example of an isolated peak as contrasted with a fold range or a dissected plateau as seen in the previous pictures. Only after seeing this picture of an actual volcanic mountain should a lesson on the formation of such structures be given. The snow on the summit of such a comparatively low peak is due to the fact that it lies in a higher latitude, of course. The trees are typical coniferous ones.

Plate IV*b*. *A Ceylon Tea Estate*

(*a*) Look at the picture and compare it with the one of the Himalayas as to the shape of the hills, and also with the one of the Welsh Highlands. Which is it more like ?

(*b*) Look at the hill on the right. What vegetation do you see on it ? How far does this extend up the slope ?

(*c*) Find the river. Through what kind of a valley is it flowing ? Is this the upper, middle or lower course of the river ? Do you think that there is always water in this river ? Why ?

(*d*) Look at the tea plants. How tall are they ? How are they arranged in the plantation ? Why are they grown on a slope ?

(*e*) What is the building in the foreground ? Read in your textbooks all that you can about what is done in this building.

*Notes for the Teacher*

This is another picture of a dissected plateau, dissected by river action ; and the river can be seen flowing at the bottom of its valley. The difference between it and the picture of the Welsh Highlands lies in the greater volume of water in the river, which fills its bed, and in the much more luxuriant vegetation. Both these are evidence that this area is very well watered. Where the forest has not been cleared for cultivation of the tea plant, the slopes of the hills are forested to the top. The Ceylon streams have water in them all the year round because of the heavy rainfall. The tea is planted on the slope in order to allow the water to run away from the roots. The factory is built on the tea estate partly because the tea is better if it is dried at once but largely because of the difficulty of moving such a bulky product where roads are few.

Plate V*a*. *Shooting the Rapids in Japan*

(*a*) Why is the water white ? Do you think it is deep or shallow here ?

(*b*) Look carefully at the picture and see how much of its bed the river fills. What do we call this kind of valley ?

(*c*) Can this river be used for irrigation ? Why ?

(*d*) Can it be used for navigation ? Why ?

(*e*) Can it be used as a route-way for roads or railways ? Why ?

(*f*) What are the men doing in the centre of the picture ? Do you think that this is dangerous ?

(*g*) What do you notice about the vegetation ? What about the climate ?

*Notes for the Teacher*

This is a picture of a gorge on one of the short, swift rivers of Japan. The river is still actively carving out its bed in the hard rock. This can be seen by the presence of boulders in the path of the stream which it has not yet been able to wear away. Consequently the water at this point is shallow, causing the 'rapids'. The river fills the whole of the valley, leaving no room for roads or railways or even a footpath. This shows that the rock through which the river is cutting its way must be so hard that the ordinary agents of weathering have no effect on it : only the force of running water has the power to cut it. The forest on the sides of the gorge shows that there is a plentiful rainfall and therefore that this gorge has not been formed in the same way as that of the Colorado (see plate XV*a*). The men in the centre of the picture are shooting the rapids with small rafts of wood. This is quite a dangerous occupation as the water is both swift and shallow and they may be overturned by striking on a submerged rock at any time. The river is of very little use to man. It cannot be used for irrigation, as there is no land to cultivate in its extremely narrow valley, nor for navigation as vessels would founder on the submerged rocks in the rapids, nor as a route-way since there is no flat land on which to build a road. The only possible use for it is that shown in the picture, namely the floating of rafts of wood down from the forests higher up the valley. Lower down the stream, where it emerges from the gorge, the water might be used for driving dynamos and making electricity.

Plate V*b*. *The Rhine Gorge*

(*a*) Find the town of Bingen on the Rhine in Germany in your atlas. This picture was taken near there and is looking downstream. Which is the north side of the picture? Which is the left bank of the river in the picture?

(*b*) How much of its valley does the river cover? What do we call this kind of valley?

(*c*) Look at the vessels on the right side of the picture. Can you see what kind they are? Why are they in one line, following one behind the other round the curve of the river? How many of them have steam coming from their funnel? How are the rest moved along?

(*d*) In which direction are these vessels moving, upstream or down? Look at your map again and see if you can suggest what these vessels might be carrying.

(*e*) Count the vessels in the picture. Is this a busy stretch of the Rhine? When a river is used in this way what do we say it is used for?

(*f*) Look at the right bank of the river. What do you see running along close to the water? Do you think it was easy to build this here? Why was it worth while to do so? Look again at your map to help you to answer this question.

(*g*) Look at the right bank of the river and notice how steep it is. Compare it with the one in the last picture. What is the difference? Compare the right and the left banks of the Rhine. What difference do you see?

(*h*) What do you think is being grown on the right bank? Does it need irrigation? How do you know? What do we call this type of cultivation? Do you know of any place in India where it is carried on?

(*i*) What is the natural vegetation shown in this picture? What does this tell you about the rainfall of this area?

*Notes for the Teacher*

This picture was taken near the beginning of the Rhine Gorge where the river breaks through the Rhine Highlands. Comparing it with the previous picture we see that the river is at a much more mature stage although it is flowing between comparatively steep-sided banks and completely covers the floor of its valley. The water is deep enough to be used for large-scale navigation. The steam tugs are pulling heavily laden barges, which have no independent means of propulsion, upstream, probably from the industrial region of the Ruhr or coal from the Saar Basin. There is just enough space for a road and railway to be built beside the river at the foot of the steep bank. The Rhine waterway is so important that it has been worth while to do this and so the river is used for navigation and its valley as a routeway. The right bank is terraced for vines while the left is still covered with natural forest.

Plate VI*a*. *Srinagar*

(*a*) Find Srinagar in your map of India. On which river is it situated ? How high above sea-level is it ?

(*b*) What are the mountains in the background ?

(*c*) Have you seen this kind of tree in your part of India ? It is one which is found quite often in western Europe. What does this tell you about the climate of Srinagar ? Explain why you should get this climate in India.

(*d*) Is this river used for navigation ? How do you know ? What is the difference between the boats you see in this picture and those you saw in the last one ? How are these boats moved along ? Say what you think they may be carrying. What is the small one in the centre used for?

(*e*) Look at the houses. Of what are they made? Why are they made of this material? Where does it come from? How is it brought to Srinagar?

*Notes for the Teacher*

This picture shows a stretch of the Jhelum passing through the city of Srinagar with the Himalayas in the background. Srinagar lies in the Vale of Kashmir about 5,000 ft. above sea-level and has a climate somewhat similar to that of western Europe due to its latitude and altitude: consequently the trees are those of the deciduous type found in temperate regions. The river is used as the main highway of the country. People live on the boats shown on the left and move them slowly from place to place by means of poles. There are no steam boats in Kashmir owing to the difficulty of bringing them the hundreds of miles upstream before they reached this part of the river. Contrast this with the Rhine, almost every part of which is used for navigation, from the sea up to Basle. It is necessary to use a map to make this clear to the class. The navigable stretch shown in the picture is cut off from the sea by nearly 200 miles of gorge and by many more miles where the water fluctuates with the season, being high with the melting snows of early summer and the monsoon rains, but low and obstructed with sandbanks at other times of the year. Most of the houses are made of wood, which has been cut in the forests and brought down on boats such as are seen in the picture or simply floated along in rafts on the river. Before 1947 many rafts of logs were floated down through the gorge to the Punjab and collected at the town of Jhelum. The small boat in the centre of the picture is one which is used for taking passengers about from one part of the town to another. The river is thus used as a road, which costs nothing to repair ; but of course progression is slower than it would be by motor-car or horse tonga.

Plate VI*b*. *Canton*

(*a*) Find Canton in your map of China. What is the river shown in the picture ? How near is it to the sea ? What do we call this part of a river ?

(*b*) How many different kinds of boats do you see in the picture ? Where do you think they are going ? Can any of them be used at sea ? If so, which ?

(*c*) Look at the vessel with a sail. It is called a junk. Find out from your textbook what it is used for and from where it has probably come. What do you notice about the shape of the steamers ? Why is this ?

(*d*) A great many people in China live in boats all the time. Find some boats of this kind in the picture.

(*e*) What are the boats on the left side of the picture doing ?

(*f*) Look at the buildings on the right side of the picture. What do you think they are used for ? Notice the chimneys at the back of the picture. What do these tell you about the occupation of some of the people in this town ? Is this a modern or an ancient town as far as you can see from the picture ?

*Notes for the Teacher*

Canton lies on the Pearl River, which enters the sea through the Si-kiang delta. The river is rather shallow : hence the flat-bottomed steam-boats and absence of any liners. Most of the vessels are used for river traffic and those on the left are waiting to load up. The numerous small craft are used as house-boats, and many Chinese live in them all the year round, a sign how precious land is in this densely populated and mountainous country. The modern buildings on the right and the factory chimneys in the background show that this part of Canton has been built fairly recently. Canton lies at the southern end of a fairly good route across the highlands of southern China to the middle Yangtze. A great deal of trade uses this railway route and Canton acts as the port. The water is too shallow to allow ocean-going steamers up to Canton, so most of the goods are brought up to it in shallow-draught steamers and junks, both of which can be seen in the picture. The flat land of the delta is also obvious and contracts with the high steep sides of the gorge in the last two pictures.

Plate VII. *The Jordan Valley*

(*a*) Find this river in your atlas in the map of West Asia. What do you notice about its height above sea-level ? Is there anything in the picture which indicates this ?

(*b*) Look up in your textbook what is meant by a rift valley. The Jordan lies at the bottom of such a valley. Is there anything in the picture to suggest this ?

(*c*) How would you describe the course of the river as seen in the picture ? What is the cause of this peculiar course ?

(*d*) Write two sentences about the vegetation shown in the picture.

(*e*) What is the cause of the many small undulations (hills and valleys) in the country on each side of the river ? See if you can find any road across this country. Why are there no villages ?

*Notes for the Teacher*

This picture shows the flat floor of the rift valley of the Jordan. The river meanders right across it between the steep-faulted sides. The picture having been taken from the air, the height of the plateau above the floor of the valley is not accurately shown. The teacher will have to point this out to the children. The contrast between the forested valley floor and the barren plateau on each side is very clear. The temperature is very much higher in the valley and water is available ; hence the forest cover. The barren hill slopes have been scarred by rain and torrents which only flow in the rainy season. It is the absence of vegetation in this semi-desert country which is responsible for this soil erosion. This picture would make a good introduction to a lesson on the effects of soil erosion.

Plate VIII*a*. *The Cornish Coast*

(*a*) Find Boscastle on the north coast of Cornwall in a map of England. This is a picture of Boscastle Harbour.

(*b*) Look at the island to the right. It is known as a ' stack '. How do you think it has been formed ?

(*c*) How much land do you see under cultivation in the picture ? Why is there so little ?

(*d*) Is the water in the harbour deep or shallow ? How can you tell ?

(*e*) Look at the road in the left foreground. Why does it have a wall on the sea side ?

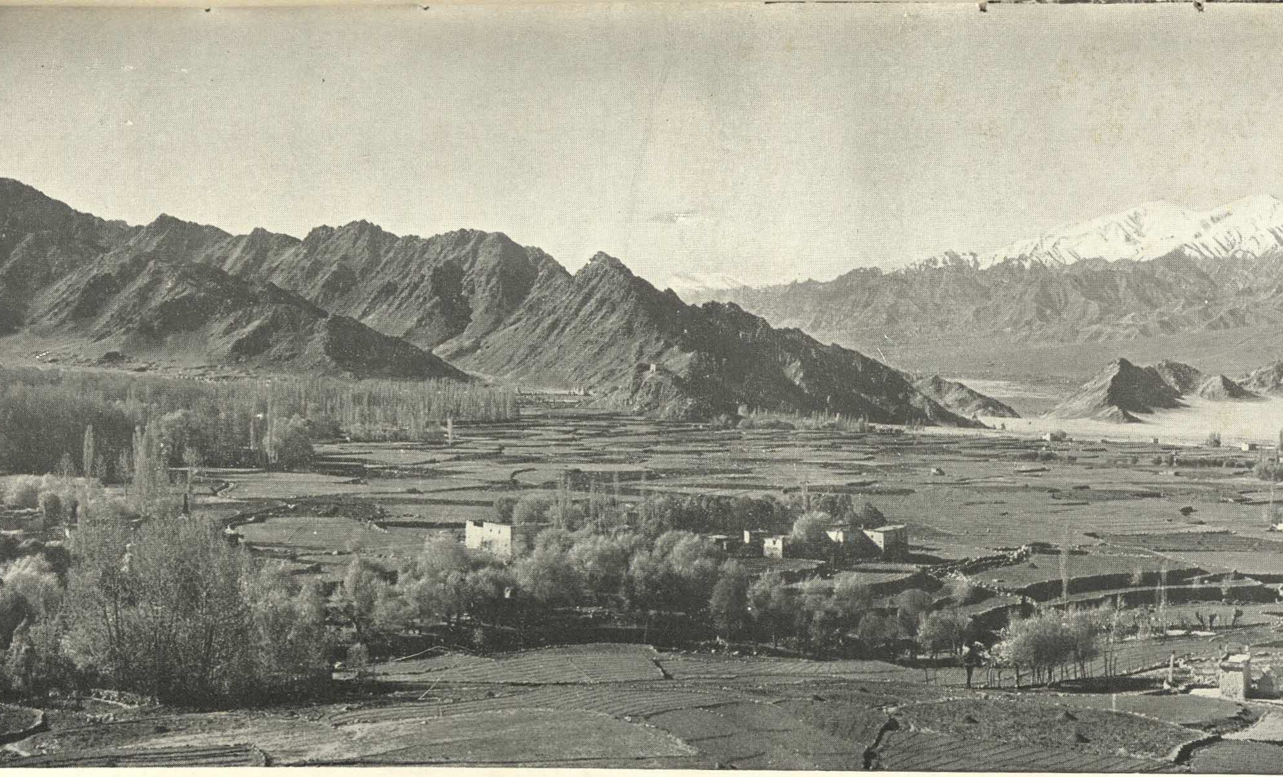


PLATE I. The Himalayas seen from Leh, Ladakh

*Professor K. Mason*

PLATE II. The Lauterbrunnen Valley *Swiss Federal Railways*

PLATE III*a*. Loch Fyne, Argyllshire *R. M. Adam*

PLATE III*b*. The Welsh Uplands *The Times, London*

PLATE IV*a*. Mount Fuji *Paul Popper*

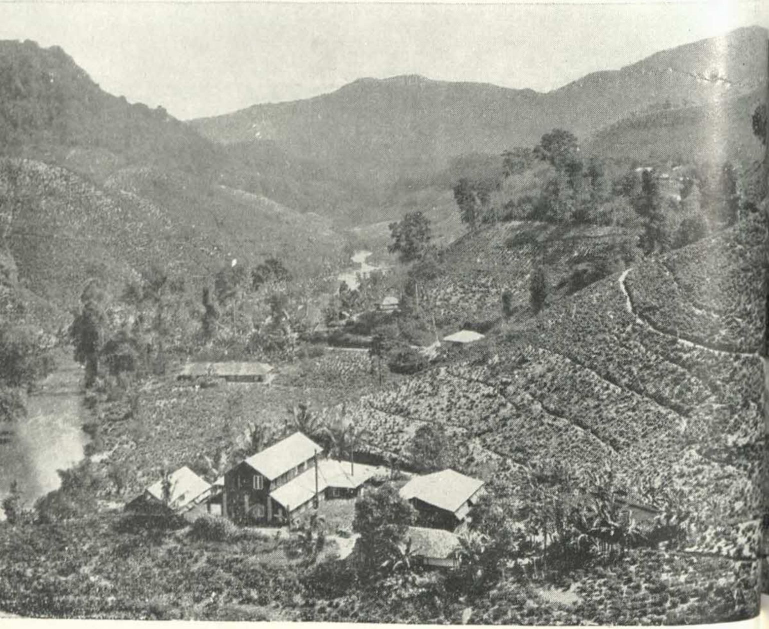


PLATE IV*b*. A Ceylon Tea Estate *E.N.A.*

PLATE V*a*. Shooting the Rapids in Japan *Paul Pop*

PLATE V*b*. The Rhine Gorge *A. Costa* from
Sitwell's *Roumanian Journey*

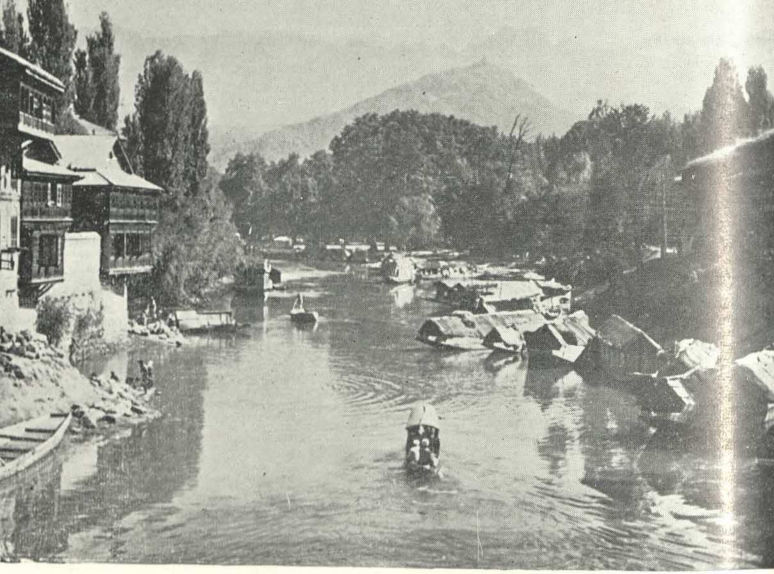


PLATE VI*a*. Srinagar *Paul Popper*

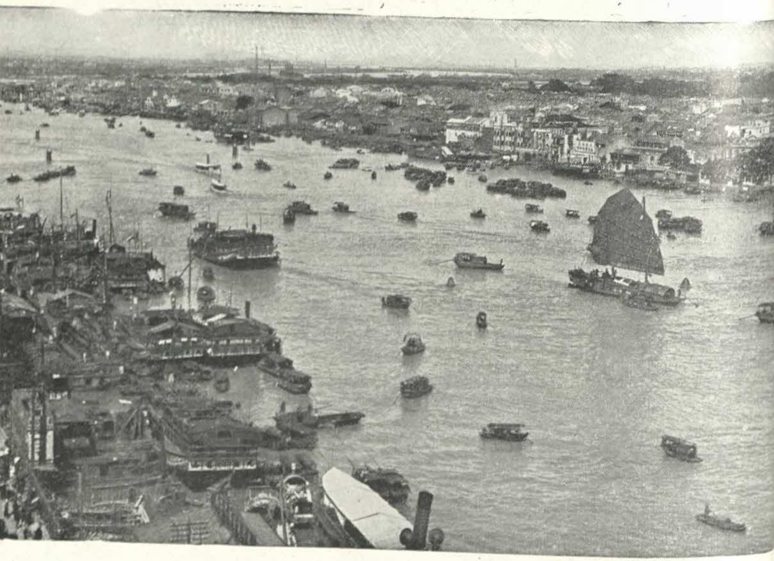


PLATE VI*b*. Canton *The Kingdom Overseas*

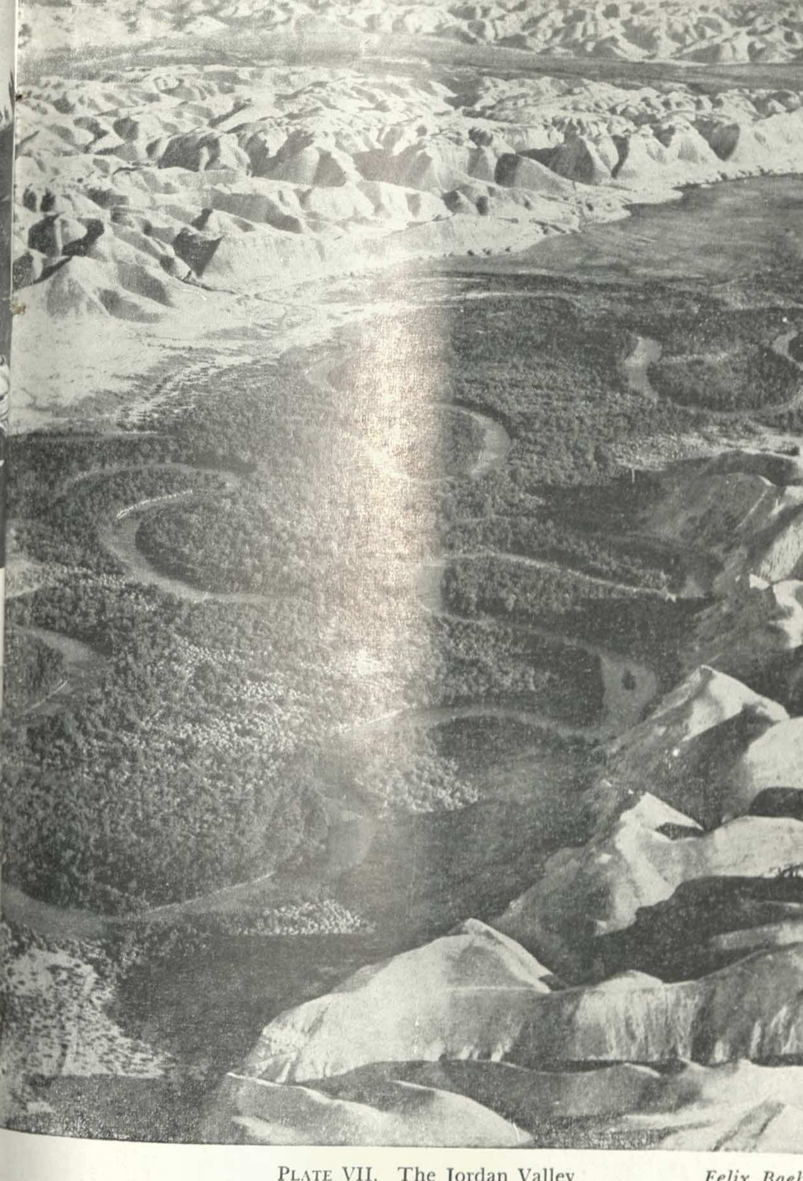


PLATE VII. The Jordan Valley

*Felix Bael*

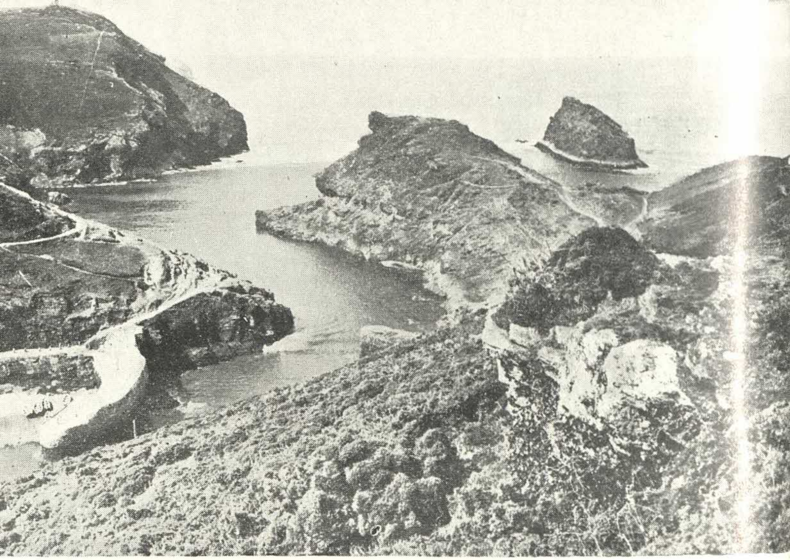


PLATE VIII*a*. The Cornish Coast *The Times, London*

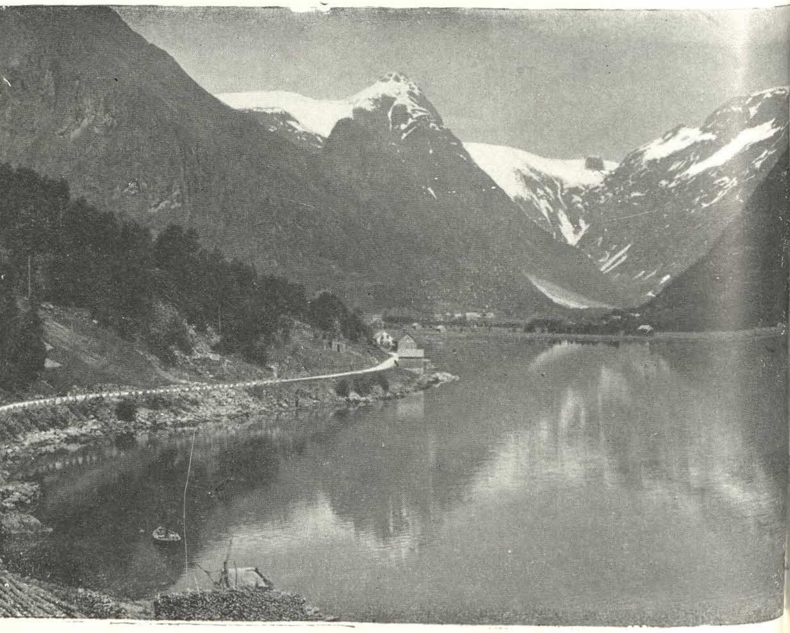


PLATE VIII*b*. The Geiranger Fiord *Norway Travel Association*

PLATE IX*a*. Eskimos *Norway Travel Associat*

PLATE IX*b*. An Arctic Mining Centre *Mackenzie Air L*

PLATE X. Vintage Time in an Italian Vineyard *E.N.A.*

PLATE XI*a*. Mountain and Pasture in New Zealand *E.N*

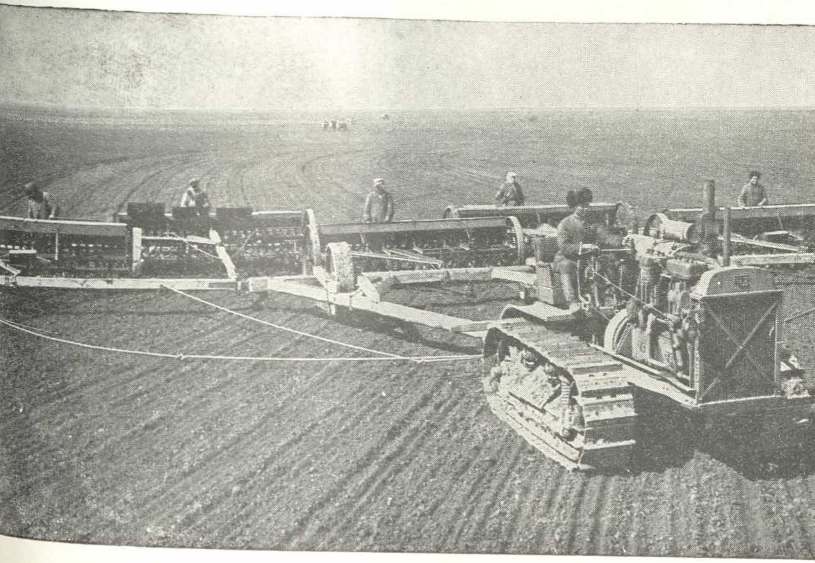


PLATE XI*b*. [illegible]

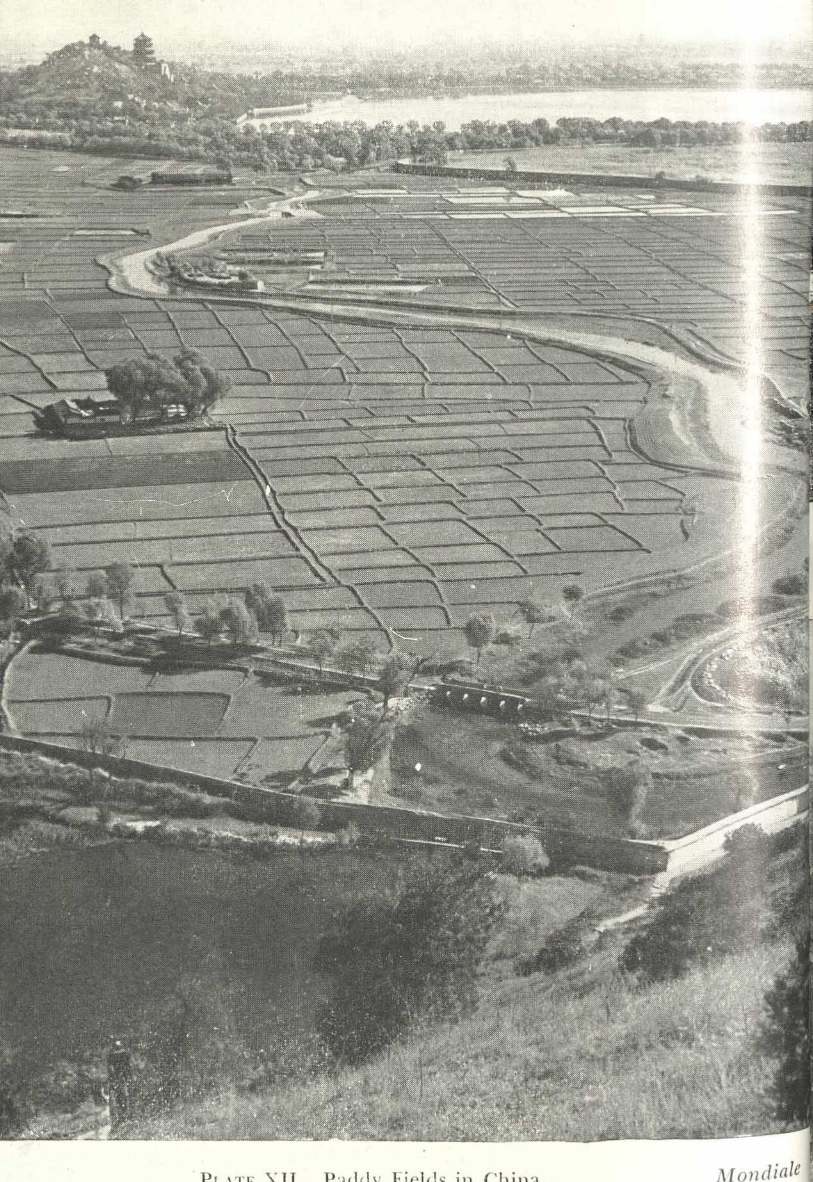


Plate XII. Paddy Fields in China

*Mondiale*

PLATE XIII*a*. A Lumber Camp *J. H. Stembr*

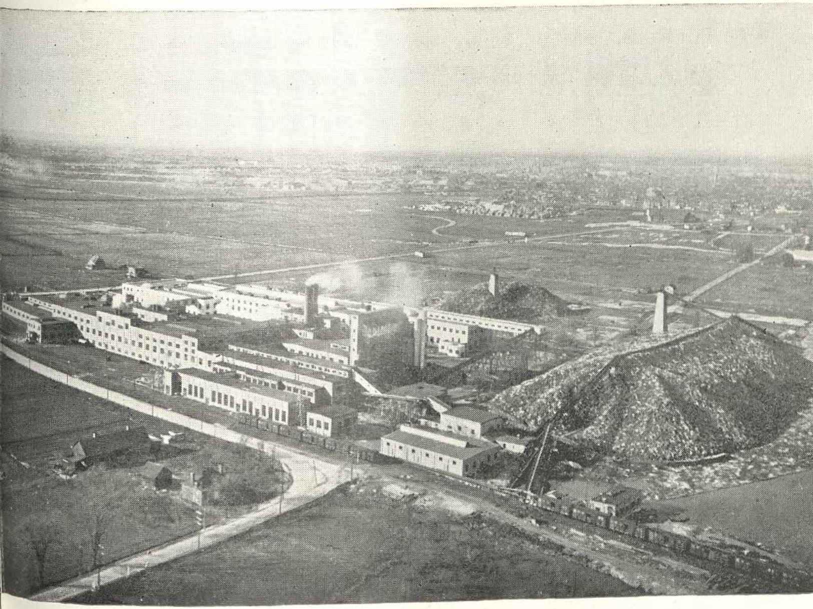


PLATE XIII*b*. A Paper Mill *Canadian Pacific Railway*

PLATE XIV*a*. Shipbuilding *Aerofilms Ltd*

PLATE XIV*b*. Rubber Plantation *Imperial Institute, London*

PLATE XV*a*. The Colorado Plateau *Mondiale*

PLATE XV*b*. Boulder Dam *Mondiale*

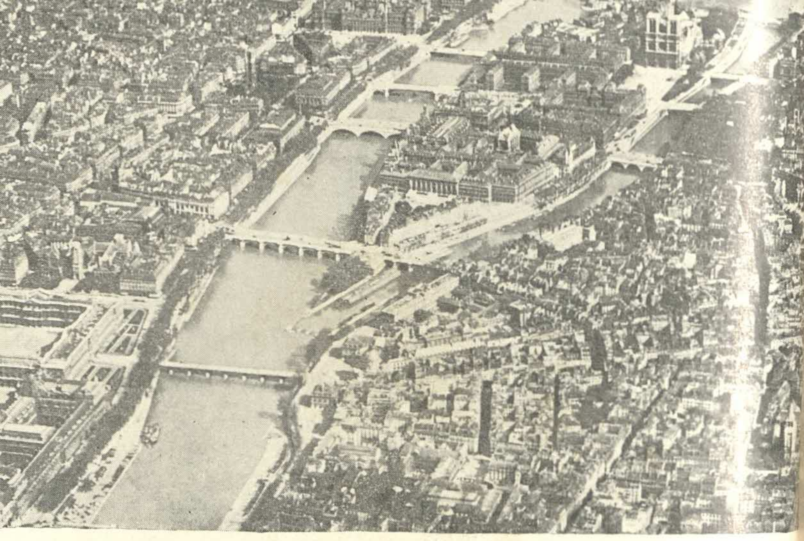


PLATE XVI*a*. Paris from the Air *Aerofilms Ltd*

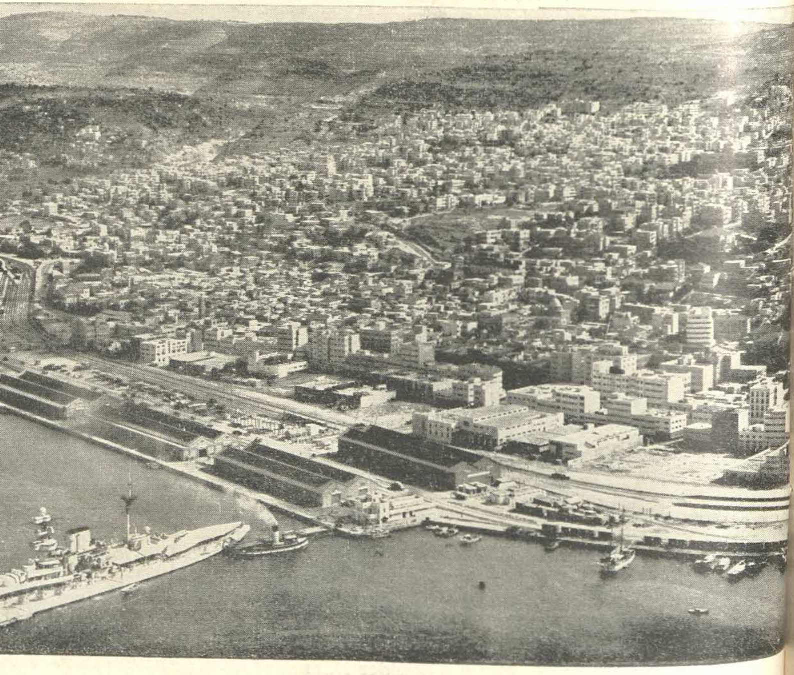


PLATE XVI*b*. Haifa *Paul Popper*

(*f*) What kind of vegetation do you see? Why is there so little?

(*g*) What size ships are likely to use this harbour? What cargoes do they most probably carry?

(*h*) What are the advantages and disadvantages of Boscastle as a harbour as far as you can see from the picture?

*Notes for the Teacher*

This picture shows typical coast scenery of western England. The harbour is the drowned end of a small river valley which has been widened by wave action. The rock stack island to the right has been separated from the mainland by wave action. The water is probably fairly deep since the steep rocks come right down to sea level. This leaves no room for flat cultivable land near the harbour. The chief occupation of such a small town will be fishing and the harbour is large enough to allow fishing craft to find shelter between its steep-sided walls and deep enough for their shallow draught. The catch will be landed at the quay in the left foreground. The windswept rocky soil allows little vegetation, and no habitation.

Plate VIII*b*. *The Geiranger Fjord*

(*a*) Find the west coast of Norway in your atlas. Use the largest map you can find and try to count the number of fjords which you see. You will soon get tired of this exercise but it gives you some idea of what the coast of Norway must be like if you remember that each one of these many fjords looks something like the picture here.

(*b*) Do you think the water is deep or shallow? Why?

(*c*) Can you see any place where a port could be built? Why not? Look again at the map and see how many large ports you can find and exactly where they are placed. Norway has a very long coastline indeed but very few ports. This picture will help you to understand why.

(*d*) What is the white substance on the hills in the background? What does this tell you about the height of the hills?

(*e*) How much forest do you see in the picture? Where is it? Why do you not see more?

(*f*) Is this arm of the sea used as a harbour?

### *Notes for the Teacher*

This picture shows the typical Norwegian fjord. It is probable that at the head, which is not visible in this picture, there is a small amount of cultivable land where the river enters the sea. The amount of such land is so small in Norway that very few large towns exist, partly because there is no room to build them and partly because there is no large quantity of any commodity to exchange. This picture should be shown to children before any attempt to explain the formation of a fjord is made. The steepness of the slopes accounts for the comparatively small amount of forest found in Norway as compared with the large amount found in Sweden in the same climatic belt.

### Plate IX*a*. *Eskimos*

(*a*) Find the map of North America. The man in this picture lives somewhere along the shores of the Arctic Ocean in northern Canada.

(*b*) This Eskimo is standing beside his house. Of what is it made ? What time of year is it ? How do you know ? Where is the door of his house ? How does he reach the house from the door ? You will have to guess this.

(*c*) What kind of clothes is the man wearing ? Where does he get them ?

(*d*) What kind of animals are there in the picture ? What kind of coats do they have ? Why is this ? Of what use are these animals to the man ? Where do they sleep at night ?

*Notes for the Teacher*

Up to now all the pictures shown have illustrated different aspects of physical geography. The next few are to show something of life in different climatic belts of the world. This one shows life in the far north where man is entirely controlled by the physical conditions around him. The children can see that the temperature is very low. Hence the snow which lasts long enough and is solid enough for man to use it as a building material for his house. In the very short summer man must use some other material. His clothes are all made of skins. These may be seal skins or caribou skins, obtained by hunting. The seal lives in the sea, and the caribou lives on the tundra moss which is uncovered in the short summer when the snow melts : in the winter it goes further south. The dogs are used in hunting and to draw sledges on which the Eskimo moves over the snow when he is on his hunting expeditions. At night the dogs sleep in the tunnel between the door and the house. The children can see some of these things in the picture but the teacher must give them more details about everyday life. Quite small children can be taught to use a picture like this as there is very little in it to confuse; but of course they cannot be expected to write their answers.

Plate IX*b*. *An Arctic Mining Centre*

(*a*) Find the Great Slave Lake in northern Canada. This picture was taken near there. What time of year was it? How can you tell?

(*b*) This is a gold-mining centre. Count the number of houses and try to estimate how many people are likely to live there. What do they have to eat and from where do they get it? To answer this look at your map as well as the picture.

(*c*) Look at your map again and find the nearest railway. Measure the distance from Yellowknife, the name of this place, on Great Slave Lake to Waterways which is the nearest railway station. The nearest large town is Edmonton. Find it and measure the distance from Yellowknife. (Your map may be too small to show this place; it is on the north-eastern shore of the lake where the river enters it.) How did this place get this strange name?

(*d*) What do you see on the snow right in front of the picture towards the right? What do you think it is used for? Where do you think it goes?

(*e*) What do you see right at the back of the picture? What are they used for? What time of year can they be used? Look again at your map to see how far these can go.

(*f*) Compare this picture with the last one and make a list of the things which are alike and those which are different. What has caused the difference?

*Notes for the Teacher*

This is a very good example of the way in which man has overcome the most difficult of physical circumstances when a sufficiently strong motive, in this case the production of gold, was present. The extremes of climate are shown by the snow. This picture was taken in January. Modern houses and other buildings have been put up in contrast to the Eskimo igloo of the previous picture, but the material has been brought from long distances. The means of communication are indicated by the aeroplane in the foreground which keeps up a regular service with Edmonton, and the boats on the lake in the background. This means is only available in summer. The numerous streams of the Canadian Shield make it possible to go long distances in shallow-bottomed canoes or other small vessels. In the winter the men who are using the modern machinery of today to obtain the precious metal have to use dog teams like the Eskimo to bring in their stores from the railhead at Waterways. The improvement of air travel, however, is the greatest factor in making it worth while for man to live in such difficult conditions.

Plate X. *Vintage Time in an Italian Vineyard*

(*a*) Where is Italy? How far is it from the Great Slave Lake? Look at your map and find this for yourselves.

(*b*) What are these people doing? What is in the tub and the baskets? What will they do with the fruit afterwards?

(*c*) How high are the vines? You can tell this by measuring them against the men. How do they grow? What are the tall sticks which you see?

(*d*) Who do you think the people are in the picture? Why are the children helping with the work? What does this tell us about the size of the fruit farm or vineyard?

*Notes for the Teacher*

Italy lies in the Mediterranean climatic belt which is just far enough from the Equator to get the Trade Winds in summer and the Westerlies in winter. This gives sufficient rain for crops to be grown but they must be of a drought-resisting nature. The vine is one of the most important of these. Its long roots stretch so far down in the soil that it is able to gather moisture from a large area. It is cut down to a foot or so above the ground in the spring, tied to stakes as seen in the picture, and when the fruit is ready in September the vines are only four or five feet high. The amount of land available for cultivation in Italy is small and most of it is farmed by peasant farmers who do all the work with the aid of their own families, hence the presence of the children in the picture. The individual farms of this nature are of course small and grow various crops. The vines are usually planted on a terraced hillside. This is not shown in the picture, but below the hill there will be small fields of wheat and maize. Each farmer grows enough to support his own family, and the grapes here shown will probably go to make wine for the farmer and his family and perhaps for the village: it is unlikely that any will be used for export. Wine made from the local grapes is the common drink of all the people in Italy.

Plate XI*a*. *Mountain and Pasture in New Zealand*

(*a*) Find New Zealand in your atlas. What are the two latitudes between which the greater part of New Zealand lies? In what wind belt does it lie? How much rain is it likely to get in a year? Remember its island situation when you are trying to answer this question.

(*b*) What shape is the mountain in the background? How high is it likely to be? How do you know? What kind of a mountain is it? Is this in North Island or South?

(*c*) What time of year was this picture taken? How do you know? Look at the trees to answer this question. Does this give you a hint about the height of the mountain?

(*d*) How many different kinds of trees do you see in the picture? Name them. What do we call the dark pointed ones in the right background? The strange ones immediately in front are called tree-ferns and are not found in other parts of the world.

(*e*) What are the animals in the picture? On what are they feeding? Do you think this is good pasture? What are the animals used for? Do you think any of the products of this farm reach India?

(*f*) Who lives in the house? What do they do? Why are the animals so close to the house?

*Notes for the Teacher*

This gives a good idea of the natural vegetation and the pasture of a country in the West Wind belt. It was taken in the summer for the deciduous trees are in leaf. There are coniferous as well as deciduous trees present. The grass in the foreground is obviously plentiful. The house in the background is the dairy farm where the men live who are responsible for milking the cows night and morning. The pasture is so good that the cows do not need to be sent away from the village, as in India, in search of food ; and it is convenient for milking cows to be pastured near the place where they will be milked. The products, butter and cheese, will probably be sent to England although it is so far away since the population of New Zealand is comparatively small and they cannot use all that they produce. The mountain is a typical cone-shaped volcano and therefore it is safe to guess that this is in North Island. It is Mount Egmont. The summer snow covering shows that it is fairly high, just over 8,000 ft. Snow would not stay permanently at such a height in India but since New Zealand lies further from the Equator the temperature is lower.

Plate XI*b*. *Changing U.S.S.R.*

(*a*) Find the steppe country of southern U.S.S.R. in your atlas. This picture was taken there.

(*b*) Count the machines at the back of the tractor. How are they moved ? How many men does it take to work all these machines ?

(*c*) How would you compare the size of this field with that of a paddy field near your home ? Has this anything to do with the use of such machinery in the U.S.S.R. and the use of hand labour in India ?

(*d*) What time of year was this photograph taken ? How do you know ? What do you think the machines are doing ? What crop will probably be grown in this field ?

*Notes for the Teacher*

This picture gives a very good idea of the extent of the vast level plains of southern U.S.S.R. which can be profitably worked by the kind of machinery seen here. These are seeders, probably sowing wheat and drawn by a caterpillar tractor. The children should be encouraged to contrast this type of agriculture with that of their own neighbourhood, especially if rice is the staple crop. It should also be pointed out to them that in India the climate allows more than one crop a year whereas in the Soviet Union and other temperate grasslands of the world there is a much shorter growing season owing to the low winter temperatures. This is another factor making for the value of machinery in speeding up the sowing time and reducing the number of workers required to cultivate large areas.

Plate XII. *Paddy Fields in China*

(*a*) Look at the picture carefully and see if there is anything which would tell you that this was taken in China and not India.

(*b*) Make a list of all the differences you see between this picture and the last one. In what ways are they alike ?

(*c*) What is the stream of water running through the centre of the picture ? Where does it come from ? Why did you not see such a stream in the picture of the U.S.S.R. ?

(*d*) Find the farmer's house. How does he reach it from the road ? Why is there no footpath ?

(*e*) What is the building on the hill ?

*Notes for the Teacher*

This picture is very like that of a similar stretch of country in India. The temple on the hill in the background shows that it is in China. It is put in here to show the contrast with the wheat fields of U.S.S.R. Children often fail to realize the immense difference in the requirements of the two cereal crops. The necessity for large quantities of water, here brought from the river by the irrigation canal running through the centre of the fields, the consequent small size of the fields and the necessity for banking ridges to keep the water in place are all clearly visible. Other things can be pointed out to the class : the small farmhouse in the centre of the fields, which must be reached by walking along the ridges, so precious is the land that every square foot must be cultivated. The buildings in the background are in contrast to the huge open spaces of the plain of U.S.S.R. It is possible to suggest too the number of people required to keep the small paddy fields in order, so that a vastly greater number of men and women are employed to cultivate a much smaller area in China or India. The ridges between the fields make it impossible to use machinery. Generally speaking it is true that wheat is the crop of the open, sparsely populated grasslands of the world while rice is the crop of the densely populated river valleys of the Tropics.

Plate XIII*a*. *A Lumber Camp*

(*a*) Find Ontario in the map of Canada. This picture was taken towards the north of this province.

(*b*) During which season was it taken ? How do you know ?

(*c*) What are the houses made of ? Who lives in them ? Are they used all the year ? If not when are they used ?

(*d*) What kind of trees do you see in the background ?

(*e*) Of what use is the water in front of the houses ?

### *Notes for the Teacher*

This is rather an unusual picture and should be useful in explaining the life of the lumbering areas of the coniferous forest belt. Children often find it difficult to understand what is meant by 'lumber' and also the activities of the lumbermen. Camps such as these are built as headquarters from which the lumbermen go out all through the winter months cutting down suitable timber. The tree trunks so cut are dragged to the water, such as is seen in the picture, and piled up on the bank until the spring floods, due to the melting ice, come and carry them down to the saw-mill. After this the work in the forest is over and the lumber-camp is empty till the next autumn. In Canada horses, caterpillar tractors and light railways are used to move the logs to the water's edge. This means that roads must be cut before the felling begins. The picture was taken just before the snow melted on the ground but the water was free of ice and the floating of the logs was just about to begin. The trees in the background are partly coniferous and partly such deciduous ones as grow in association with them.

### Plate XIII*b*. *A Paper Mill*

(*a*) Look at your map of Canada and find Three Rivers in Quebec. This picture was taken there. Describe its position from the map.

(*b*) This is a paper mill. Beside the mill there is a great pile of raw material from which the paper is to be made. What is it? How did it get there?

(*c*) What is the use of the railway which you see in the foreground?

(*d*) What kind of power is used to work the machinery of this mill ?

*Notes for the Teacher*

A great deal of the soft wood of eastern Canada is transformed into wood pulp to make paper, chiefly newsprint. At the side of the factory there is a huge pile of small blocks of wood, the unwanted parts of the logs which have been used for planks or the smaller branches which are too small to use as planks. These will be pulped in the mill and then used to make cheap paper. The numerous falls of the Canadian Shield provide the hydro-electric power to work the machinery both of this kind of mill and the saw-mills which deal with the more valuable timber. Most of the paper so made is exported–hence the railway siding shown in the picture. The paper rolls are loaded straight into the trucks seen there and carried away to the ports.

Plate XIV*a*. *Shipbuilding*

(*a*) Find the river Clyde in Scotland. This picture was taken on its banks.

(*b*) Count the number of unfinished ships which are on the slipways.

(*c*) Which way will these ships first enter the water ? What do we call the part of the ship which you see in the picture ?

(*d*) What are all the buildings which you see to the right of the ships ?

(*e*) Who lives in the small houses which you see to the right of the background ?

(*f*) What is the likely source of power used in these shipyards ?

*Notes for the Teacher*

The next two pictures show contrasted occupations. Shipbuilding is the most important industry of the Clyde, which furnishes a sheltered waterway, deep enough to launch the largest vessels, close to a good coalfield to provide power and also to iron which though not used much today was sufficient to ensure the location of the industry in the early days of iron-built ships. The hull shown in the picture is finished. Then the ship is launched, stern first, into the deep water of the river. There the engines are fitted and the other parts are finished. The 'shops' shown near the water are full of machinery of every description making the different things required for the ship. Let the children realize the great number of things required in a modern ship and try to find out from where each has come to the Clyde.

Plate XIV*b*. *Rubber Plantation*

(*a*) Find Malaysia in your atlas. This photo of a rubber plantation was taken on the Malay Peninsula.

(*b*) How are the trees planted ?

(*c*) What is the man doing ? What is the white thing tied to each of the trees ?

(*d*) What do you notice about the hill in the background ? Do you think that these plants are natural vegetation or crops ? Why ?

*Notes for the Teacher*

This is a picture of a typical industry of the Tropics. The rubber tree was originally found in the forests of the Amazon and of the Congo. The difficulty of finding the scattered trees and keeping the product clean when it was collected from wild trees caused the plantation method to be tried in Asia in areas with a similar climate. Let the children realize the advantage of thus planting numbers of the same kind of tree in straight rows in a small space. When collected in the small cups seen in the picture the latex is usually converted into crude rubber near the plantation. In the background of the picture can be seen another crop which has been 'contour-planted', that is, arranged round the hill at successive levels. This is characteristic of Malaysia, where careful terracing prevents the soil erosion often found on hillsides in countries with equally heavy rainfall. Different crops can be grown at different levels. The picture is not clear enough to show what the crop is.

Plate XV*a*. *The Colorado Plateau*

(*a*) Find the river Colorado in your map of North America. In what latitudes does it flow? How many tributaries join it in its lower course? What does this tell you about the climate of the basin?

(*b*) In what kind of country is the river flowing? Do you see grass, trees, tributary valleys, houses or roads?

(*c*) Where does the water in the river come from? Look at the map.

(*d*) Compare this gorge with that of the Rhine. What differences do you see? Remember that this photo was taken from the air and therefore the sides of the gorge do not look as steep as they would if you saw them from the valley floor.

(*e*) What is built across the river in the foreground? What is the building on the left? What do you think is the chief use of this river?

Plate XV*b*. *Boulder Dam*

(*a*) This picture is a closer view of the Colorado River at the dam. Compare the two pictures and say from which direction each of them was taken.

(*b*) What shape is the dam ? Why is it built like this ? On which side of the dam is the water stored ?

(*c*) Look at the roads along the side of the gorge below the dam. How are they built ? What does this tell you about the steepness of the sides of the gorge ?

(*d*) Find the power station. You can see it more clearly in the previous picture. Which side of the dam is it ? What will it do ? Look at your map and see if you can find any towns which will be likely to benefit from this power station.

(*e*) What do you notice about the country round the dam ? What does it tell you about the climate of this area ? What are the two purposes for which the dam was built likely to be ?

## *Notes for the Teacher*

These are two rather unusual pictures of the famous Colorado canyon, a deep gorge cut in horizontal rocks in the dry Colorado plateau. The rocks are comparatively soft and under normal circumstances you would expect to find a wide, open valley ; but owing to the lack of rain no tributary valleys have been cut and the weathering of the sides has not taken place, the only erosion being that produced by the river itself.

The first picture was taken looking upstream to the reservoir and some broadening out can be seen, but not much, as the valley bottom is at such a depth and the sides so steep. This steepness is not so obvious in the first picture as in the second and the two should be shown together. The water will be used for irrigation, and the power-station below the dam provides electricity for the mining towns of the plateau.

Plate XVI*a*. *Paris from the Air*

(*a*) Find Paris, the capital of France. On what river is it situated? What is the tributary which joins the main river here?

(*b*) The town began on the island which you see in the picture. Why?

(*c*) Count the bridges which link this oldest part of the town with the newer parts on the banks of the river.

(*d*) Find a large church on the island and an old palace on the right bank. The picture was taken looking upstream, so which is the right bank?

(*e*) It must have been expensive to build so many bridges and yet the people thought it worthwhile to make this their capital city and it grew and grew on both banks of the river. Look at your atlas again and write down all the advantages of this site.

*Notes for the Teacher*

These last two pictures are of town sites. Paris is one of the best centres for a capital of a great country that we have. It began as a fishing village on this island in the Seine where it could be easily defended. Being at the junction of the Seine and the Marne it was a natural route-centre for the Paris Basin and the city soon began to spread beyond the limits of the island. The river is not wide and can be easily bridged here because of the island, and as 'France' grew beyond the Paris Basin this site remained still the best centre for government for the whole country since it could be linked by good roads with all parts. The old church of Notre Dame can be seen on the island and the old palace of the Louvre near the left hand corner of the picture–the right bank since we are looking upstream. Children should use their atlas as well as the picture to try to visualize the growth in size and importance of the town.

Plate XVI*b*. *Haifa*

(*a*) Find the town of Haifa on the coast of Israel. What is the name of the mountain close to the town ?

(*b*) Look at the picture and describe the position of the town. Look at the map again and see if you can add anything to your description.

(*c*) Haifa is a port but can you see a harbour in the picture ? Look again at your map and see why not. What protection has the shipping which uses this port ? You can only see this from your map.

(*d*) Name the different kinds of ships which are seen in the picture.

(*e*) What are the long sheds just behind the waterfront ? What lies behind these and in front of the town ?

(*f*) What do you suppose the tall buildings in the front of the picture are used for ?

(*g*) Where do you think the residential part of the town is built ? Do you think this is a new town or an old one ? Compare the buildings with those of Paris to answer this question.

*Notes for the Teacher*

Haifa is the new port built at the end of the pipe line from Iraq but it is built on the same bay as the old port of Acre, the only place where there is any protection from storms along the coast of Israel. This the children can easily see for themselves if they are encouraged to look at the map. There is no harbour, for even here the shore is low and sandy, like the east coast of India, but Mount Carmel, seen at the back of the picture, gives some protection from south-west winds. The picture shows the warehouse sheds, the railway and the office buildings needed for a busy port. The oil refineries and storage plant are situated further round the bay and are not seen. The cruiser shows that this is the naval as well as the business port. The residential part is on Mount Carmel.

## XI

## ORAL LESSONS

In chapter IX emphasis was laid on the necessity for individual work by pupils and the devotion of whole periods to individual work was recommended. Even in oral lessons the teacher should constantly endeavour to make the pupils participate actively in the work. He should frequently ask questions to induce them to make intelligent inferences from the facts presented and to ascertain facts for themselves by studying maps, diagrams and statistics. Individual work in the form of homework is an important adjunct to oral teaching and should never be neglected.

The chief aims of the teacher in giving oral lessons should be to stimulate the interest of the pupils and to guide their work. Much has been said in previous chapters about methods appropriate to oral teaching and only a brief survey will be attempted here. In presenting the matter to be taught the teacher should bear in mind, and use where appropriate, the regional method and the comparative method. He may employ or vary the logical order of topics to suit the subject-matter, or he may employ the psychological order. Important events of recent occurrence in different parts of the world should be referred to by the teacher in order to add interest to his lessons. For this purpose, and also in order to avoid giving obsolete information, the teacher should be a constant reader of newspapers.

Vivid descriptions of places and peoples are quite appropriate in oral lessons ; but these descriptions should not be too long, otherwise the interest of the pupils is likely to flag. To obtain material for his descriptions the teacher will have to read widely outside the textbook. Books of travel and magazine articles often provide material, and textbooks intended for English schools will be found helpful, especially those dealing more particularly with human geography.

Visual instruction is essential as an accompaniment to oral instruction. Oral descriptions are made ten times more interesting to the pupils if accompanied by a display of pictures, especially those projected on to a screen by a lantern or projector. Maps are, of course, essential, and the appropriate maps should always be displayed and used in teaching. The blackboard, too, should be constantly used for drawing sketch maps and diagrams and for writing a summary as the lesson proceeds.

Constant revision is necessary. Oral instruction cannot be relied on to be thorough and complete in itself. Pupils quickly forget what they hear. It is a good plan to devote the first five or ten minutes of a lesson to revising the work done in the previous lesson. Revision may be by means of oral questions and answers, but this is not very satisfactory, because only a few pupils can be tested in the time available. To test all the pupils it is best to ask questions orally and to make all pupils write down the answers on slips of paper. Three or four questions, each of which can be answered in a few words, are generally sufficient to find out which pupils have mastered the previous lesson and which pupils have not. Sometimes it is worthwhile giving about twenty questions on the previous lesson all of which require only one-word answers and which can be corrected by the class itself. An example of this kind of test is given in the chapter on testing and examining. Failure to write correct answers should be investigated and, if found due to idleness, suitably punished.

Notes of four lessons on the geography of south-east Asia are given below to illustrate some of the points mentioned. The portions in italics represent the blackboard summary.

### FIRST LESSON

Name the three peninsulas of southern Asia. You have already studied India in Class IX. We shall now study the peninsula of S.E. Asia. But the peninsula of S.E. Asia includes one country that you have already studied. Which? Burma. We shall therefore study

### *THE PENINSULA OF SOUTH-EAST ASIA EXCLUDING BURMA*

*Position.* Look at the map. Between what well-known lines of latitude does the peninsula of S.E. Asia lie? 0°-23½° N.

*Relief.* Can you describe the mountain systems? *The northern mountains; the eastern mountains running down to the Mts of Annam; the western mountains running down to the centre of Malaya.* The highest of these mountains are about 2,500 metres high. Can you name any important river valleys? The valleys of *R. Mekong, R. Menam, Red River.*

*Climate.* What kind of climate has Ceylon? Equatorial. What do you understand by 'equatorial climate'? What part of the S.E. Asian peninsula corresponds in position to Ceylon? Malaya. What kind of climate has Malaya? The rest of the S.E. Asian peninsula corresponds in position roughly to India. What kind of climate has India? Monsoon. What kind of climate has S.E. Asia, excluding Malaya? *The climate of Malaya is equatorial. The climate of the rest of S.E. Asia is monsoon.*

From which monsoon, SW. or NE., does Malaysia get rain? Both. From which monsoon does the rest of the S.E. Asian peninsula get rain ? SW. Which part of India gets rain from the NE. monsoon ? The Madras coast. One part of the S.E. Asian peninsula also gets rain from the NE. monsoon. Which ? The Annam coast. In what months ? October–December.

Malaya gets rain from both monsoons. The rest of the S.E. Asian peninsula gets rain from the SW. monsoon except the Annam coast which gets rain from the NE. monsoon.

*Political Divisions.* What different countries are there in the S.E. Asian peninsula, apart from Burma ? *Thailand (Siam), Cambodia, Laos, North Viet Nam, South Viet Nam, Federation of Malaysia.* We shall study each of these separately.

## *THAILAND (SIAM)*

*Size. About 2 lakhs sq. miles* (nearly twice Madhya Pradesh).

*Population. About two and a half crores* (about two thirds Madhya Pradesh).

The relief and climate have already been studied. In what parts are the mountains ? Which is the great river of Thailand ? Can you divide Thailand into natural regions ?

### *Natural Regions*

(1) *The northern mountainous region ; forests ; teak* (floated down rivers).

(2) *The southern mountainous region ; tin.*

(3) *The valley and delta of the R. Menam ; rice ; well populated.*

(4) *The eastern plain ; poor rainfall ; few people. Chief town and port–Bangkok* (1,200,000) ; 40 miles up R. Menam.

*Chief Exports. Rice and teak.*

Railways. From Bangkok south to Singapore and north to the forested region.

People. Thai, like Burmese ; Buddhists. Some Chinese.

Government. Kingdom.

## *VIET NAM, LAOS AND CAMBODIA*

Relief and climate have already been studied. Which are the chief mountains ? Which are the chief rivers ? Into what natural regions can you divide the S.E. Asian peninsula ?

*Natural Regions*

(1) *The valley and delta of the R. Mekong ; Laos and Cambodia ; Saigon ; rice.*

(2) *The mountains of Annam ; forested ; inaccessible.*

(3) *The valley and delta of the Red River ; Tongking ; Hanoi ; rice, coal.*

Cambodia, Laos, North Viet Nam and South Viet Nam are independent countries in what was formerly French colonial territory.

Homework. Draw a map of the S.E. Asian peninsula showing the mountains, the rivers Menam, Mekong and Red River, Bangkok, Saigon, Hanoi, Penang and Singapore.

## SECOND LESSON

Examine homework.

Ask the following revision questions to be answered in writing on slips of paper.

(1) Between what lines of latitude does the S.E. Asian peninsula lie ?

(2) What are the two chief exports of Thailand ?

(3) What are the three natural regions of S.E. Asia ?

(4) What kind of climate has Malaya ?

## *FEDERATION OF MALAYSIA*

*Position.* Between what lines of latitude does Malaya lie ? 0°-7°N.

*Relief.* Study the map in Stamp, *The World,* page 159.

Mountains in the centre, plains in the west and east.

*Climate, equatorial.* Let us examine more closely what is meant by 'equatorial climate' by considering the figures for temperature and rainfall at Singapore. They are as follows :—

| | Jan. | Feb. | Mar. | April | May | June |
|---|---|---|---|---|---|---|
| Temperature (°C.) | 25.5 | 26 | 26.5 | 27 | 28 | 27 |
| Rainfall (mm.) | 215 | 152 | 165 | 178 | 184 | 171 |

| | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|
| Temperature (°C.) | 27 | 27 | 26.5 | 26.5 | 26 | 26 |
| Rainfall (mm.) | 222 | 215 | 178 | 209 | 254 | 267 |

*Mean temperature of coldest month (January)* 25.5°C.; *of warmest month (May)* 28°C.

What is the annual range of temperature? 2.5°C.

*The annual rainfall is* 2362 mm and it rains in every month of the year.

Compare the annual range of temperature with that of Jabalpur, which is 16°C.

Compare the rainfall with that of Jabalpur, which is 1422 mm.

The mean temperature in September of Jabalpur is 29.5°C. and the rainfall 213 mm.

The climate of Singapore for every month of the year is rather like that of Jabalpur in September.

*Natural Vegetation.* In a climate which is hot and wet throughout the year what natural vegetation do you expect? *Dense, evergreen forest.* 'The only paths are the rivers'. The villages and cultivation of the Malays are chiefly along the coast and banks of rivers.

But the forest has been cleared now in many parts. Why? To grow rubber.

*Chief products. Rubber; about one-third world output. Tin; about one-third world output.*

Story of rubber, wild rubber, demand for motor and cycle tyres, how rubber trees were brought to Malaya. Wide use of tin. Wealth of Malaya depends chiefly on these two products.

People, Malays, Chinese (in majority), Indians, few Europeans. Chinese and Indians come to the country on account of rubber and tin.

Political Divisions. (1) The Federation of Malaysia consists of all the states on the peninsula.

The island of Singapore is administered separately, as it is not a part of the Federation of Malaysia. (2) Sarawak (3) Sabah.

Illustrations. Show pictures with the projector (15-20 minutes).

Homework. Draw a map to illustrate the importance of the position of Singapore.

## THIRD LESSON

Comment on revision slips of previous lesson. Ask the following revision questions to be answered in writing on slips of paper.

(1) What are the two chief products of Malaya?

(2) Write down the mean temperature for January and May for Singapore and the annual rainfall.

(3) What is the natural vegetation of Malaya?

Examine homework.

Show the importance of the *position of Singapore.*

(1) *Convergence of sea routes from* (*a*) *Europe and India,* (*b*) *China and Japan,* (*c*) *Australia.*

(2) *Good harbour.*

(3) *Was a convenient base for the British navy to protect the Commonwealth in the east.*

(4) *Convenient port for collecting products of Malaya and East Indies for export and for distributing imports.*

## *NATIONS OF SOUTH-EAST ASIA:*

### (*A*) *INDONESIA*

Comment on name, cf. 'East India' Company; West Indies discovered by Columbus in 1492. Europeans came for spices (the Spice Islands).

Look at the map in Stamp, *The World,* page 160. The Philippine Islands we shall deal with later.

East New Guinea (British—under Australian Government), dense forests, undeveloped, natives few and backward.

Brunei (British), Sarawak and Sabah; oil.

E. Timor (Portuguese).

Remaining islands belong to Indonesia. Most important is Java.

### *JAVA*

*Java: area* 50,000 *sq. m., population* 63,000,000.

*Rest of Indonesia: area* 683,000 *sq. m., population* 33,000,000.

For pictures of volcanoes in Java, see Stamp, *The World,* pages 46, 50 and for rice fields page 68.

*Reasons for importance of Java:—*

(1) *Rich volcanic soil;* volcanoes along centre of island.

(2) *Industrious population; Hindu strain;* old Hindu temples.

(3) *Careful development by Dutch Government.*

*Position.* South of equator.

*Climate, equatorial;* NW. and SE. monsoons.

Draw a map of Java on blackboard; notice Madoera island.

*Natural Regions*

(1) *Alluvial coastal plain in north; rice, sugar.*

For sugar production, see diagram in Stamp, *The World,* page 71.

(2) *Mountains and high plains in centre and south; volcanoes. rice, tea, coffee, rubber, cinchona.*

Story of discovery of quinine as medicine. In what parts of India is cinchona grown?

Mineral products: oil.

*Chief towns and ports; Batavia, Surabaya.*

Homework. Draw a map of Indonesia.

## FOURTH LESSON

Comment on revision slips of previous lessons. Ask the following revision questions to be answered in writing on slips of paper.

(1) Give three reasons for the importance of Indonesia.

(2) What are the chief products of Indonesia?

Examine homework.

### *THE REST OF INDONESIA*

What is the population of Java?

What is the population of the rest of Indonesia?

Apart from Java the other islands are not very important. We shall deal with them briefly.

The chief islands are the following:—

Sumatra: population, 9.5 millions; rubber, oil, tea.

Kolimantan: oil.

Sulawesi: copra.

### (*B*) *THE PHILIPPINES*

*Position.* 5°-20°N., outside equatorial belt; about 7,000 islands.

*Climate. Monsoon.*

*Area.* 1 *lakh sq. miles. Population* 27,000,000.

*Crops. Rice, coconut, Manila hemp (for ropes), sugar-cane, tobacco.*

*Chief town and port; Manila.*

*Politically independent.*

## *CHINA*

You have perhaps seen some Chinese traders in Jabalpur going round from house to house selling silk and other goods. Who has seen one? Or you may have seen the Chinese boot-makers in the Sudder Bazaar. How can you describe the appearance of a Chinese man? Broad, flat face, narrow eyes, slanting eyebrows, straight hair; yellowish skin; usually wearing loose trousers and short coat.

Look at the map of Asia. Before 1912 the Chinese Empire was ruled by an Emperor whose capital was at Peking (Peiping). He ruled not only China itself, but Manchuria and Mongolia. China proper extends up to the Great Wall. Where is the Great Wall? Why was the Great Wall built? No Himalayas in north of China to keep off invaders.

In 1912 the Emperor was driven out and a Republic was set up. What is a Republic? The capital of the Republic was first at Canton and then moved to Nanking. After 1912 there were constant civil wars, one governor or general fighting against another. Millions of Chinese died as a result of these wars, or at the hands of bands of robbers who roamed over the country, or from famines and floods for which the Government of the Republic were unable to organize any proper relief. Some years ago disastrous floods occurred in the Yangtze valley and millions of Chinese lost all their property.

When Japan invaded China in 1937 General Chiang Kai-shek became the leader of all the Chinese forces in China's fight against Japan. He moved the capital to Chungking. That war is now over, but a civil war between the Nationalists and the Communists followed, and in 1949 the Communists gained control of all of China except the island of Formosa.

We shall start by studying the Republic of China.

Show pictures of China on the screen (15 min.).

Homework.

(1) Look at your map of Asia and compare China and India in size.

(2) What can you say about the climate of China from the following figures?

| | Jan. Temp. | July Temp. | Annual Rainfall |
|---|---|---|---|
| Canton | 13°C. | 28°C. | 165 cm |
| Hankow | 4°C. | 29°C. | 109 cm |
| Peking | –5°C. | 26°C. | 64 cm |

Now follow two lessons on the Rhone Valley and two on the Temperate Grasslands. The first are meant for high school classes and are followed by a map summary to illustrate Chapter VII on 'Learning from Maps'; while the last two are meant for use in the primary school and illustrate the story-telling method.

## *THE RHONE VALLEY*

### LESSON 1. *Regional Geography*

Let the class use the largest map of France which they have in their atlas. The *Oxford School Atlas* p. 36 is as good as any. With this map open let the class answer the following questions on slips of paper.

Where does the R. Rhone rise?
Through what lake does it flow?
What is its great right-bank tributary?
What river joins this tributary near Chalon?
What are the two important left-bank tributaries?
From which mountains do these rise?
Name the highland on the west of the Rhone.
Name the highland on the west of the Saone.
Name the mountains bordering the eastern side of the valley.
Into what sea does the Rhone flow?
What kind of mouth does it have?

Correct these slips pointing out the following facts on a wall map :—

The Rhone rises in the Alps of Switzerland and flows westward through the lake of Geneva, dropping much of its silt in that lake. At Lyons it is joined by the Saone which has already collected the waters of the Doubs before it joins the Rhone and the two flow together, continuing the north-south direction of the Saone to the Mediterranean, on the way collecting the waters of the

Isere and Durance from the French Alps and reaching the sea through a large delta.

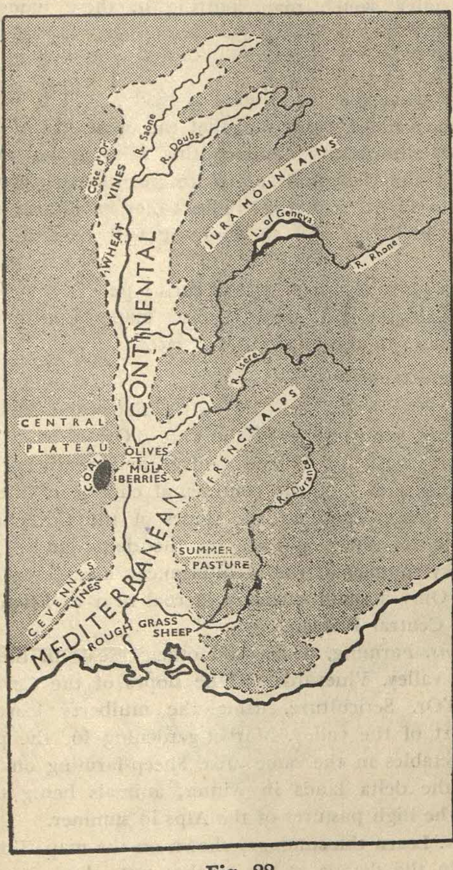


Fig. 22

The valley is narrow, a corridor between the Central Plateau on the west and the Alps and Jura on the east. Point out that the Central Plateau is drained away from the Rhone and therefore the steep edge must be towards this valley. It has two names:

in the south this edge is known as the Cevennes and further north, in Burgundy, as the Cote d'Or.

Draw a quick sketch map, putting in these names, on the blackboard.

*Climate*

Ask orally what type of climate is likely. Will it be the same for the whole valley? Point out that the open end of it is likely to have a Mediterranean climate (this is so as far as Valence). Be sure that the class finds all places mentioned. North of this what type is to be expected? The valley is almost completely enclosed by highland and therefore it will have a continental climate.

Let the class give characteristics of each type.

Put in Valence and write across map 'Continental' and 'Mediterranean' in the appropriate places.

*Vegetation and crops*

Northern part, wheat on the valley floor and vines on the eastward-facing, sunny slopes of the Cote d'Or.

Lower part south of Valence, olives and mulberries (cannot stand the cold winter of the continental climate of the northern part of the area). Vines on the slopes of the Cevennes. Rough grass suitable for sheep pasture on the delta lands. This dries up in hot dry summer of the Mediterranean area.

*Minerals.* Only a small quantity of coal near St Etienne on the edge of the Central Plateau.

*Occupations.* Farming, wheat and other cereals in the northern part of the valley. Vineyards on the slopes of the Cevennes and the Cote d'Or. Sericulture, using the mulberry leaves in the southern part of the valley. Market-gardening for the production of early vegetables in the same area. Sheep-farming on the rough pasture of the delta lands in winter, animals being transferred by train to the high pastures of the Alps in summer.

*Homework.* Learn the summary shown on the map. The children should fill in the details as the teacher puts them into the map during the lesson.

*N.B.*—When making the blackboard summary in this way it is best to use coloured chalks and to allow the children to make their summary in the same way, e.g. rivers and coastline blue, edge of highland brown, names of the mountains brown, words describing climate white, products green, occupations red.

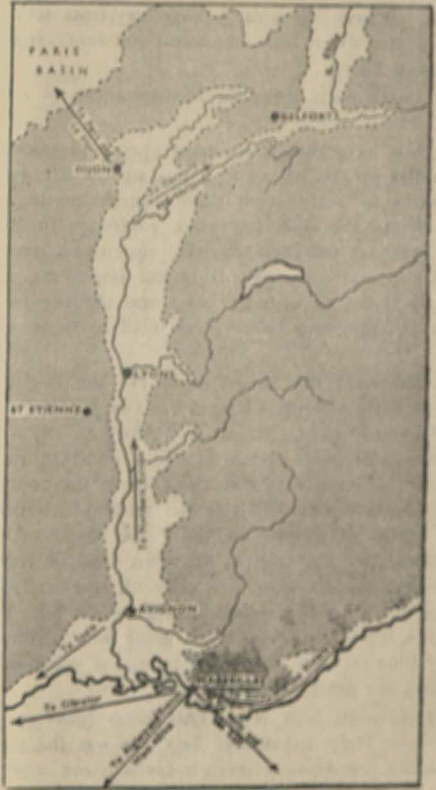


Fig. 23

### LESSON 2. *Routes and Towns*

Put up a map of Europe (Physical) and ask the class to find all the easy ways from the Mediterranean to northern Europe.

They should be able to see at a glance that the only land route possible for the movement of armies or for the movement of merchandise is by the Rhone Valley. Tell how from Roman times at least this has been *the* great passage way from south to north and therefore has always been important and contains some of the oldest towns in Europe.

1. The through route from the Mediterranean to Holland and the North German Plain.

Let the class have their own maps open and trace the route from Marseilles up the Rhone to Lyons, up the Saone to Chalon, up the Doubs to Belfort and down the Rhine to Rotterdam. This was one of the most important routeways in Roman and medieval times. Let the class tell what they think were the chief things which passed each way. It is still important, but mainly for passenger traffic, as with the safer and cheaper sea transport now available heavy and bulky goods tend to be sent round by Gibraltar.

2. The route from the Mediterranean to the English Channel via the Paris Basin and the Channel Ports or Le Havre.

Trace the route up the Rhone and Saone to Dijon then over a comparatively narrow stretch of the Cote d'Or and down a tributary of the Seine to Paris. From there the route branches to several Channel ports. This is the route which connects the governing centre of France, in the Paris Basin, with Mediterranean France. Get the class to say what kind of traffic uses it. Mediterranean products, wine, silk, olive-oil, soap, early vegetables. fruit going north to the industrial regions of NE. France and Paris, textiles, machinery, Paris goods going south. Note that there are railway lines on each side of the river, one going north-east to Germany and one north-west to Paris.

3. The Isere route into Italy. This valley leads via the Mont Cenis pass into Italy. In ancient days this was the least difficult way of crossing the Alps and even today it is the only practicable route for goods. The modern railway uses a tunnel under the Alpine pass. This way leads down to the large manufacturing town of Turin in the Lombardy plain. Chief thing sent, silk from the Rhone Valley for manufacture in Turin mills.

4. Coastal route from Riviera to Rhone Valley and the northern countries of Europe. Note the very narrow plain between the

Alps and the sea east of Marseilles. High mountains keep out cold winds. Winters warm and sunny. Playground of Europe for people with money from the dark, damp, foggy manufacturing towns of England, Germany and northern France. All use the Rhone Valley.

5. Route round eastern end of Pyrenees to Spain and via Carcassonne gap to western France. Again quickest connexion with northern Europe.

6. Sea routes connecting northern Europe with the east via the Suez Canal, used chiefly for passengers and mails, too expensive for goods, which go round by sea to the northern ports. Also from Marseilles across the Mediterranean to the countries in north and west Africa. Note position of Algiers with regard to Marseilles.

*Towns*

1. Belfort. A gap town guarding the important route leading from the Rhone to the Rhine. One of the few easy routes from Germany to France. Recall fighting there in the 1st World War.

2. Dijon. Railway centre on Paris route. Manufactures wine, the famous Burgundy, from vines grown on the Cote d'Or. Get class to suggest this from their map of the previous lesson.

3. Lyons. Very old town, important in Roman times. Let class suggest reason. Confluence town. Railway centre. Largest silk manufacturing town in the world. Raw material obtained from local sources and from China via Marseilles. Power from coal on plateau edge.

4. St Etienne. Coal-mining town. Some manufactures. Silk, textiles, machinery.

5. Avignon. Bridge town at head of delta. Old route by the Durance meets the Rhone Valley here.

6. Marseilles. One of the most important towns in France. Notice its exact position to the east of the delta. Explain the set of the Mediterranean currents which flow from east to west and so carry the delta alluvial mud westwards *away* from the port. Receives all the produce of India and west and north Africa. Large passenger port as mentioned above. Manufacturing town using groundnut oil from South India in the manufacture of margarine (butter substitute) mixed with olive-oil, soap using the same ingredients. Refines olive-oil grown locally.

NOTE.—Build up map as in previous lesson, on board and in notebooks. Use fewest lines possible.

Homework. Draw maps to show the exact position and importance of the following towns: Belfort, Dijon, Lyons, Marseilles.

This is not too much for the children to do in half an hour or 40 minutes since they have all the information in concise form in the sketch map made in class and can use the atlas. Each map should be about half a page in size and cover only the area immediately around the town.

## *THE TEMPERATE GRASSLANDS*

### LESSON 1. *The Kirghiz Steppes*

This lesson is suitable for children in the third year of school life. The teacher should have a large, coloured picture if possible in front of the class. This should be as simple as possible, for little children cannot understand a complicated picture. It is possible to manage without, but a picture is a great help.

The following facts should be in the mind of the teacher before he begins his story and he should so build up the story that they are taught almost unconsciously. It is a sign of a bad lesson if the class can tell you afterwards the name of the boy about whom the story was told but not the kind of country in which he lived.

(*a*) The grasslands of the world lie in the centre of continents.

(*b*) They experience a Continental climate with cold winters, hot summers, low rainfall coming mainly in early summer.

(*c*) The rainfall is too low for the growth of trees; but grass (which germinates, flowers and seeds within the few months when rain is available) is able to grow well.

(*d*) The natural occupation of people entirely dependent on the existing conditions is pastoral work. Large flocks can be fed on this type of country provided that there is free movement from place to place, the flocks moving on from one area to another as the herbage is used up.

(*e*) Therefore these continental grasslands are the home of nomadic, pastoral tribes so long as the people in the area continue to be creatures of the environment unaffected by what science is doing elsewhere.

(*f*) Where man has been able to adapt the natural conditions somewhat, these natural grasslands make excellent wheat lands, since wheat is only a cultivated grass.

We shall take one example from each of these types of country, the Kirghiz as the first and the wheat lands of Canada as the second. Such areas are fast becoming part of the 'bread basket' of the world.

One more thing should be remembered when taking this type of lesson. It is not possible to teach all that the teacher knows about either of the areas concerned, but the child should have nothing to unlearn when he comes to more detailed, regional lessons higher up the school, and he should have a firm foundation on which to build his later knowledge.

Show the picture and ask the class to say what they see. People sitting or standing near a tent, which is circular, horses grazing and probably sheep or goats also. The people are dressed in heavier garments than we wear. Do they live in India? Not in our part of the country at any rate. Take a globe and show the Central Asian Steppes. (Not a map: at this stage small children can quite easily understand a globe as a 'toy' world but cannot understand a flat map.) They should always find their own country first and can then easily relate the position of the country about which the story is being told. Get children to tell you that the little boy, seen in the picture, lives nearer the North Pole than we do and also that he never sees the sea because he lives so far away from it. If possible use a slate globe and colour in the area of the Central Asian Steppes.

Now begin the story, making one small boy or girl, as the case may be, the hero and using your imagination as to the things that would interest such a small child in the life lived by his family in a 'yurt' throughout the year. Make the following points:—

During winter 'yurt' or tent, is pitched near a stream. Trees are found near stream and willow rods cut to make new 'yurt' framework. Felt for covering 'yurt' made by mixing wool from sheep with hair from camel or horse, wetted and pressed into sheets: this also done in winter. Winter *very* cold, snow, therefore everyone wears fur coats made from skins of animals, sheepskin hats and soft leather boots. Women wear white cloths over heads. No shops at which to buy clothes so women make them. Furniture of tent or 'yurt' very simple, leather buckets for fetching water from stream, leather bottles for carrying it when moving, woollen carpets and blankets and fur rugs to cover beds, all made from the coats of the animals. Food mostly meat and milk from the animals. Fire in centre of 'yurt' in which is a hole in the roof to let out the smoke.

In April snow begins to melt, grass appears and ground covered with amazing carpet of flowers; this is the spring. Family moves tents from riverside and moves out with all the herds of sheep and goats. Move as a group, leader in front on horseback, then men and boys, some riding horses, others driving animals on foot, women and children behind on camels sitting on the baggage which consists of the tents and all the furniture. Note that all the house and all the furniture can easily be rolled up and placed on animals' backs. Try to get class to see the excitement which the children of the group would have at this change of season, something which people in many parts of India do not know. At end of day the 'yurts' would all be set up, on the grassy plain which stretches for miles and miles without a road or a landmark. It is now warm enough to sleep out of doors and the animals are allowed to wander as they please. Sometimes the children sleep out with the lambs. Each morning the animals are driven out to pasture, but not too far away from the tents for all of them are milked twice a day, sheep, goats, cows, camels and mares. Butter and cheese made by the women from this milk. Stay in one place about six weeks till all the grass near the tents has been eaten up, then move again to another grazing-ground.

A little rain may come as the spring merges into summer but not enough to freshen the grass, which gradually gets drier and drier and browner and browner till it is of no use as food for the flocks. Then the group moves further afield to the foot of the mountains where there are snow-fed streams which keep the grass green. They remain here till the cold weather begins to come once more and then move down from the highland to the same lowland stream-bed where they spent the last winter. Try to let class feel the self-sufficiency of this life, entirely dependent on the land and the animals so that a man's wealth depends entirely on the size of his flocks and herds. There is a lack of intercourse with the outside world, though a few traders move along the caravan routes; but normally no one goes to market because there is nothing to exchange.

If there is time available this lesson can be broken into three or four telling the story in instalments, season by season. It will be found that the children remember better this way. Let them make a model as a class effort, building up a bit each lesson. Also each child could draw a picture.

## LESSON 2. *The Prairies of North America*

This lesson is generally taken a year after the previous one. The geographical facts to be taught are the same as in Lesson 1, but in this case man has adapted some of the physical conditions to his use and no longer lives a nomadic life, but a settled farming one, selling his goods far away from home in the large industrial cities where man cannot grow food for himself, and receiving in return those commodities which make life easier and some of which are required to make his farming more satisfactory.

Therefore the additional facts to be taught are: —

(*a*) The need for good means of transport for marketing the goods.

(*b*) The interrelation between the food-producing and manufacturing people of the world.

(*c*) Recent changes which are taking place in certain areas of this region with the development of power and mineral resources.

Begin in same way as before with picture and globe. Picture will have Canadian children and vast stretches of golden wheat, probably with a machine reaping it.

Tell story of life of this child through the seasons of the year making the following points: —

He lives in a well-built house, the materials for which must have come from some distance since there are no trees to provide wood and little stone available locally. His clothes must have been bought from a town though he lives far from one on his father's farm. They are made of wool, for the winters are *very* cold, snow on the ground for five months as on the Kirghiz Steppes. He goes to school through the winter when there is little work to be done on the farm: it may be that he has to go several miles to get there. When he comes home he must help with the work on the farm because there are so few men to do it all. Every child has his or her share of the daily work to do. In winter the machinery must be overhauled ready for the spring sowing, animals must be fed and watered, wood chopped and the fires for the central heating (found in most large farms now) kept alight. On the whole the winter is the slack season when young people meet at each other's houses for pleasure, going and coming on sledges when the snow is on the ground. Telephones and television have made life more easy than it used to be but even now life is still pretty lonely on isolated farms. Picture the barns where the farmer must store large quantities of fodder for his horses, used for taking the grain to the nearest railway, and for the few cattle kept to supply the family with milk. The snow makes it impossible for animals to graze out of doors. They must always be kept in warm, dry outhouses during these months.

In the spring work on the farm begins in earnest, the machinery is brought out and the land ploughed as soon as the snow melts. Then the seed is sown also by machinery since there are not enough men to do it by hand and the area to be sown is so large. Try to get children to picture the enormous flat fields similar to the great stretches of the Asiatic Steppes. As the months go on the land becomes covered with the tiny green shoots of the wheat and the farmer is busy with the weeding and hoeing of the crop. The same dry weather which we saw in the Steppes is found here, with only occasional showers of rain sufficient to allow the grain to swell. The children get long summer holidays in order that they shall be able to help with the harvesting which begins about August and is done by means of machines which reap, bind and sometimes even thresh the grain all at the same time. This is the busiest time of the year, for unless the grain is cut at exactly the right time it may be spoilt by bad weather or not get to market in time to avoid the freezing over of the waterways by which most of it reaches the ports. Picture the excitement of everyone on the farm and the fun of riding on the wagon which takes the grain to the nearest railway town. The farmer now gets his reward for the year's hard work and sells his crop to be sent eastwards to the many big industrial towns or perhaps to be sent overseas to Europe. Now he has some money. Perhaps his wife takes the children to the nearest store and buys warm winter clothes and large quantities of food, flour, sugar, tinned fish, root vegetables like carrots and potatoes, meat, all of which can be stored during the winter months, for the cold is so intense that the meat freezes and so can be used when wanted. Now once more the farm settles down to its comparatively quiet winter.

After telling this comparatively simple story the teacher should suggest ways in which recent developments are changing the lives of the farmers, e.g. the use of electricity (how obtained?) and the use of more machinery on the farm.

This lesson, too, can be broken up into two or three. Let children colour a picture of the Prairies in winter with the snow on the ground; and in summer, just before the harvest. These can be drawn by the teacher and duplicated on the Roneo or Gestetner machine and if kept together in a folder—which can be made in the handwork class—form a very good revision collection.

INSTITUTE OF EDUCATION FOR WO
Extension
SERVI
CALCUTT

## XII

## TESTS AND EXAMINATIONS

SOME kind of testing is essential at all stages of the school course. In the first few years a few oral questions to see that the class has not forgotten what was done in the last lesson is all that is needed but when the middle school is reached more is required. How can this best be done? The difficulty in questioning orally is that a few children only get the opportunity to answer and the lazy members of the class too often evade their work. For this reason it is always best to get all answers written. This need not take long if the children are always provided with paper and pencil before they come into the class and the correction can be done equally speedily by each child correcting his neighbour's work. If this method is adopted the preparation of the questions should be very carefully done so that there is no possible ambiguity in the question and so that the answer shall be of one or two words only and with no possibility of mistake. If children are to correct each other's work it is essential that the answer should be either right or wrong. Sometimes a few questions only are needed, such as those given in the second lesson on south-east Asia on page 127, but at the end of a series of lessons a longer test should be given. For example, the following might be given on the two lessons on the Rhone Valley.

| | |
|---|---|
| 1. Name two left-bank tributaries of the Rhone ... ... | 2 |

2. Name the mountains which form the western boundary of the Rhone-Saone Valley ... ... ... ... 2
3. Name the mountains which form the eastern boundary of this valley ... ... ... ... ... 2
4. What two types of climate are found in this valley? ... 2
5. Where is the boundary between the two types? ... ... 1
6. Which is found north of this boundary? ... ... 1
7. Name one crop which is grown in both climatic zones ... 1
8. Where is this crop chiefly found? ... ... ... 1
9. Name two other crops which are found in the southern part of the valley ... ... ... ... 2
10. Name three products which are made from these crops ... 3
11. Name the most important crop of the northern part of the valley ... ... ... ... ... 1
12. To what use is the delta land put? ... ... ... 1
13. Name two important routes which use the Rhone-Saone Valley ... ... ... ... ... 2
14. To what important town does the Isere route lead? ... 1
15. Which valley has the greatest strategic importance to France? ... ... ... ... ... 1
16. Which is the French town which guards this route? ... 1
17. Which is the town at the confluence of the Rhone and Saone? ... ... ... ... ... 1
18. What is the most important occupation of the people of this town? ... ... ... ... ... 1
19. From where do they get the raw material for this industry? 2
20. In which town is Burgundy wine made? ... ... 1
21. Where does it get the raw material for this industry? ... 1
22. Which is the coal-mining town of the valley? ... ... 1
23. On which side of the delta is Marseilles situated? East or west? ... ... ... ... ... 1
24. In which direction does the Mediterranean current flow? 1

25 Name one thing which Marseilles imports from India ... 1

26. Name two things which are manufactured from this in Marseilles ... ... ... ... ... 2
27. What is the name of the 'Playground of Europe' to the east of Marseilles? ... ... ... ... 1
28. In which season do people from northern Europe come here? ... ... ... ... ... 1

29. How are the cold north winds kept off this coast? ... 1
30. Name the north African port nearest to Marseilles ... 1

If this list of questions is examined it will be found that there is only one correct answer to each. This consists of separate words only and the questions cover the whole of the facts given in the two lessons. It will be seen that 40 different points have been asked and it is as well when the question is given to indicate how many words are required in the answer. When using this type of test no question should be repeated and only enough time allowed for writing the word or two required. If this method is adopted time is not wasted and the teacher discovers which children really know the facts and the children have the satisfaction of getting something correct and knowing that they have done so.

Another type of test which is very useful is the longer one given at intervals of a month or so, in which the child is allowed to use his atlas and possibly even his textbook and which will take a whole period or more. This type of test is to see whether a child can reason and express his conclusions in a clear and concise fashion and there is no harm in providing him with the facts or at any rate the source from which his facts can be obtained. Let us suppose that there have been a series of lessons on Australia and the teacher wishes to know whether the class has grasped the salient features of the geography of that continent. He might set the following paper to be answered with the help of the *Oxford School Atlas* and Stembridge's *Australia, New Zealand and the Pacific Islands* (The New Oxford Geographies).

1. Account for the location of the sheep-farming industry in Australia. See maps on pages 14, 17, 19, 25 and 30. Read pages

31 to 33 if you wish; but no marks will be given for statements copied out of the book.

2. Describe the country shown in the picture opposite page 14 (The Blue Mountains) and what part it played in the opening-up of the continent. Read pages 5 and 6 if you wish.

3. Compare the east coast of Australia with the west coast of India with regard to structure, climate and vegetation. Account for the likenesses and differences. See maps on pages 13, 17, 19 and 25.

4. Study map on page 56 and account for the facts shown on it. Use the maps on pages 19, 25, 30, 34, 37, 39, and 45 to help you.

5. 'In a country so isolated, and with such great internal distances as Australia air transport is destined to become increasingly important both for overseas and inland communication.' Expand this statement. Use the map on page 2 and the map on pages 44-5 of the atlas to help with the first part and the map on page 20 and the map on page 43 of the atlas to help you with the second part.

Such a paper would take about two periods and need not all be given at the same time. It would not be suitable for the terminal or annual examination but is very valuable for use from time to time in class.

For the terminal or annual examination a different type of test is now being used and is much more satisfactory than the old one. It tests a child's knowledge of the facts, is easy to correct but difficult to set, and covers a great deal of ground in a short time. The objection is sometimes made that so much reading is required on the part of the pupil that he has no time to think out the answers to the questions. He should not need to think. If he really knows his facts the association of the question should bring the answer to his mind at once and children should be taught to know their facts so thoroughly that this can be done. A child should know that the SW. Monsoon blows on the west

In marking this question half a mark is given to each of the rivers, mountains and towns, Tigris-Euphrates counting as two, also for the lines of latitude and longitude making a total of 15. For the Mediterranean climate 3, Monsoon climate 2, wheat 2, fishing 1 (there is no choice), isotherm 1, currents 1, making a total of 10 for the second half of the question. Note that if possible a large enough map should be provided so that the children can write the names straight on to it. This is much more natural than making a numbered list on a sheet of paper to correspond with the numbers in the map and takes considerably less time. In public examinations the second method is often used as it is much quicker to correct, but there is no justification for using this way in a school paper where the number is limited to the members of one class.

2. Fill in the blanks in the following paragraph writing the words neatly in the space provided :—

*N.B.*—Only one word is required to fill each space.

Europe is a peninsula to the west of (1). It lies between lat. (2) and lat. (3) and is therefore almost entirely within the (4) wind belt. The mountains run from (5) to (6), from Spain to the Caucasus. The northern part of the continent is an almost flat (7) with the exception of (8). Since the rain-bearing winds come from the (9) ocean the amount of rain (10) from west to east but no part of the continent (11) of the Alps and (12) of the Caspian has insufficient rain for the growth of crops. The summers in the lands south of the Alps are very (13) and (14) but crops which are specially adapted to this type of climate can be grown. The most important of these are (15) and (16) and (17) fruits. The Plain of Lombardy and the Plain of Hungary and the Ukraine in the southern (18) have a (19) climate. The chief crop grown in these three areas is (20). 10

This type of question is difficult to make because there must be only one possible answer for each blank. It is easy to correct for the same reason. Again if possible let the class write the answers on the question paper. If this is done the spacing must be such that there is ample room for the child to write. The answers to be accepted for this question are (1) Asia, (2) 35°N., (3) 70°N., (4) westerly, (5) west, (6) east, (7) plain, (8) Scandinavia, (9) Atlantic, (10) decreases, (11) north, (12) west, (13) hot, (14) dry, (15) grapes (or vines), (16) olives, (17) citrons, (18) Soviet Union, (19) Continental, (20) wheat.

Of course nos. 2 and 3, 13 and 14, 15 and 16 may be reversed. Half a mark should be given for each correct answer.

**3. Draw sketch maps to show the position and importance of London and Bombay. 10**

All the points shown in the maps on pages 25 and 26 should be expected although only the fewest lines need be drawn. Coloured chalks will be the simplest way of producing such a map quickly.

**4. Make four columns and head them Region, Occupation, Country, Town. In the first column copy the following list of regions numbering them 1 to 19.**

> **Lancashire, The Alpine Valleys, The Tigris-Euphrates Plain, Kyushu, The Clyde, The Red Basin, Java, The Irrawaddy Valley, The Polders, The Lombardy Plain, The banks of the Hooghly, The Dead Sea, The Ruhr Valley, Ulster, The Menam Delta, The Cote d'Or, Luzon, The Plain of the Vistula, The Malay Peninsula.**

**In column 2 write the occupation of large numbers of people in each of these areas, choosing your occupation from the following list:**

> **sugar-planting, dairy-farming, cotton-weaving, collecting potash, growing dates, ship-building, growing hemp, manu-**

facturing jute, coal-mining, hotel-keeping, cutting teak, making armaments, growing wheat, silk-weaving, growing rice, tin-mining, growing vines, linen-weaving, growing rye.

In column 3 write the country in which each of these regions is found. Choose your country from the following list:

Scotland, Germany, Federation of Malaysia, China, Iraq, Ireland, Indonesia, Italy, Poland, England, Thailand, France, Japan, Holland, The Philippines, Israel, Switzerland, India, Burma.

In column 4 write down the name of one town connected with each occupation. Choose your town from the following list:

Belfast, Glasgow, Gdynia, Manila, Milan, Lucerne, Nagasaki, Bangkok, Chungking, Baghdad, Essen, Batavia, Calcutta, Manchester, Dijon, Alkmaar, Rangoon, Haifa, Mocha, Penang.

*N.B.*—Remember that all four columns must match. 20

The answer to this question should look like this.

| *Region* | *Occupation* | *Country* | *Town* |
|---|---|---|---|
| 1. Lancashire | Cotton-weaving | England | Manchester |
| 2. The Alpine Valleys | Hotel-keeping | Switzerland | Lucerne |
| 3. The Tigris-Euphrates Plain | Growing dates | Iraq | Baghdad |
| 4. Kyushu | Coal-mining | Japan | Nagasaki |
| 5. The Clyde | Ship-building | Scotland | Glasgow |
| 6. The Red Basin | Growing wheat | China | Chungking |
| 7. Java | Sugar-planting | Indonesia | Djakarta |
| 8. The Irrawaddy Valley | Cutting teak | Burma | Rangoon |
| 9. The Polders | Dairy-farming | Holland | Alkmaar |
| 10 The Lombardy Plain | Silk-weaving | Italy | Milan |
| 11. The banks of the Hooghly | Manufacturing jute | India | Calcutta |
| 12. The Dead Sea | Collecting potash | Israel | Haifa |
| 13. The Ruhr Valley | Making armaments | Germany | Essen |
| 14. Ulster | Linen-weaving | Ireland | Belfast |
| 15. The Menam Delta | Growing rice | Thailand | Bangkok |
| 16. The Cote d'Or | Growing vines | France | Dijon |
| 17. Luzon | Growing hemp | Philippines | Manila |
| 18. The Plain of the Vistula | Growing rye | Poland | Gdynia |
| 19. The Malay Peninsula | Tin-mining | Malaysia | Penang |

This is the type of question which looks much more difficult than it really is. It takes a long time to make because each occupation must be so characteristic of the area chosen that it cannot be mistaken, and as far as possible no two areas must be characterized by the same occupation. In this list the Irrawaddy Valley and the Menam Delta both grow rice ; but teak is cut only on the slopes of the Irrawaddy Valley, so if the rice-growing area is reversed the teak-cutting occupation will be left without a space. This is not likely to cause difficulty because the word delta is used for the rice-growing area. Some children may put the vine into the Lombardy Plain, but the winters are too cold for vines on the plain. The mulberries are grown in the warmer valleys and the silk manufactured in the towns at the foot. Coal is mined in the Ruhr Valley but armaments are not characteristic of Kyushu, so that there should not be much difficulty in matching these correctly. Each item in the four lists should be properly spaced from its neighbour.

In marking give half a mark to each correct occupation and a quarter for each correct country and town as these are much easier than the occupation.

5. At the end of each sentence in the list given below there are three alternative endings. Only one of these makes the sentence true. Cross out the two which are not correct.

(*a*) Yaks are pack animals used in Spain/Tibet/Japan.
(*b*) Fjords are found on the coast of Norway/India/Saudi Arabia.
(*c*) Copra is the dried fruit of the vine/coconut/olive.
(*d*) The Gobi is a plain/forest/desert.
(*e*) An oasis is a fertile place/dry valley/coastal plain.
(*f*) The Rhine is chiefly used for irrigation/hydro-electric power/navigation.
(*g*) Central Spain consists of a mountain range/plateau/plain.

(*h*) The St Gothard Pass leads over the Alps/Himalayas/Pyrenees.

(*i*) India imports watches from China/Scandinavia/Switzerland.

(*j*) Denmark is famous for its forestry/dairy-farming/wheat lands.

5

The above is a modified form of the 'true-false' test. It has the advantage of providing the pupil with the correct answer; and having a choice of three possibilities the risk of pure guessing is less than in the usual form. This question can quite well be done directly on the question paper and should take very little time.

Half a mark for each is sufficient.

6. Look carefully at the diagrams (facing page 155) showing temperature and rainfall for each of five towns in Eurasia. Each is characteristic of a different climatic region. Describe the climate of each by filling in the blanks in the following statements. Use words from the lists given below and having described the climate finish by filling in the last blank with the name of the town.

Words to be used in filling in the blanks:

*Rainfall,* heavy/light.

*Seasons of rain,* summer/autumn/winter/all the year.

*Temperature,* very cold/cold/cool/warm/hot/very hot.

*Range of temperature,* high/low.

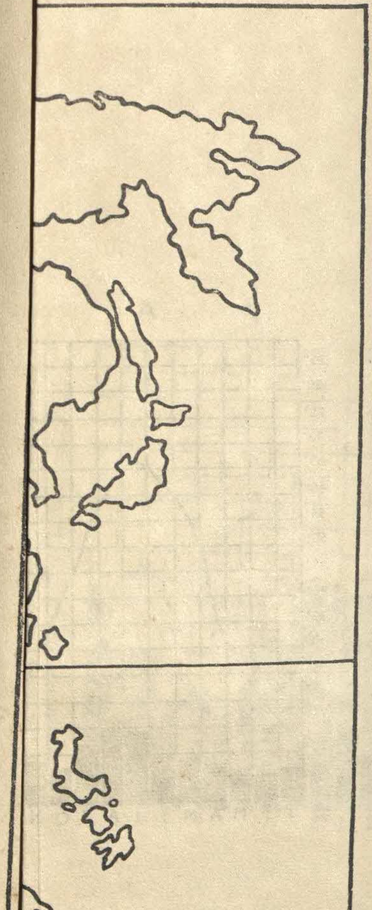
*Climatic regions,* Monsoon/Mediterranean/Equatorial/Cool Temperate (W. Margin) /Central European.

*Towns,* Bergen/Hongkong/Moscow/Athens/Singapore.

Town A has a —— rainfall. The wettest season is ——. The winters are —— and the summers are ——. Therefore the range of temperature is ——. This town lies in the —— climatic belt and must be ——.

Town B has a ——rainfall ——. The driest time is in early ——. The winters are —— and the summers ——. Therefore the range of temperature is comparatively ——. This town lies in the —— climatic belt and must be ——.

Town C has a —— rainfall ——. There is no —— or —— season so the range of temperature is ——. It lies in the —— climatic belt and must be ——.



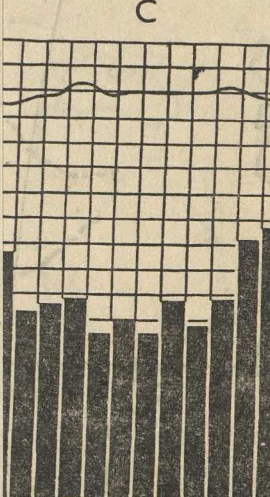
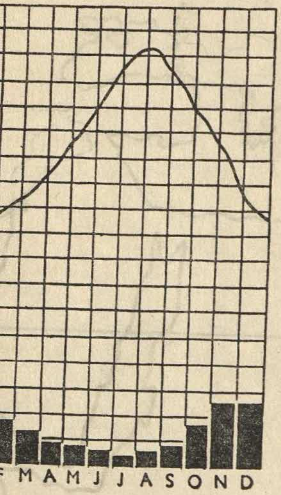
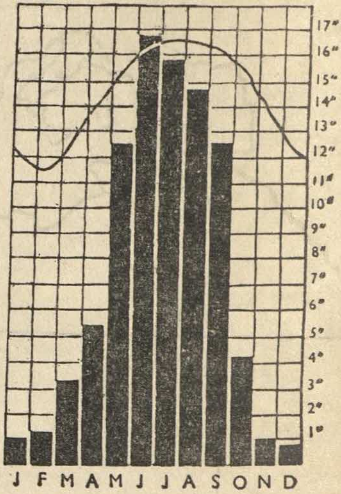


Fig. 25

D



E



Town D has a —— rainfall and the wettest season is ——. The —— is very dry. The winters are —— and the summers are ——. The town lies in the —— climatic belt and must be ——.

Town E has a —— rainfall, the highest amount coming in the —— season; the —— are dry. The winters are —— and the summers ——, therefore the range of temperature is comparatively ——. This town lies in the —— climatic belt and must be ——.

23

This type of question tests the pupil's ability to read a climatic graph, his knowledge of the characteristics of the different climatic belts of Eurasia and his knowledge of the location of five towns in the respective belts. The framework of the description of the climate is given so that time may not be lost in thinking out the best form to use. In marking, give a full mark to the name of the climatic belt and to the name of the town, since these are the result of reasoning, and half a mark to the rest since they only depend on correct readings of the diagrams.

7. The following figures give the population for the respective countries and regions to the nearest million:

India 510
Malaysia 11
Burma 24
S. Viet Nam 16
China and Tibet 690
Thailand 30
Ceylon 11
Japan 97

On the map provided put one dot for each million of the population in the countries named. Put most dots in that part of each country in which you think most of the people live and leave only a few dots for parts of the country where only a few people live.

Answer each of the following questions in one word.

In which country did you find it most difficult to fit in the correct number of dots?

Which country has the densest population?

This question tests the pupil's ability to use the dot method of making a distribution map and also his knowledge of the relief of the respective countries. In marking, the following points should be taken into consideration :

In India most dots should be in the Ganga lowlands, and least in the dry NW. The deltas of the east coast and a narrow strip on the west coast are nearest to the Ganga Plain in density. The remainder of the dots should be scattered over the Deccan.

In Burma, Thailand and S. Viet Nam most dots should be placed in the deltas.

In China most in the Northern Plain and the Yangtze Valley, not forgetting the Red Basin ; least in the plateau of Tibet.

In Malaysia and Ceylon little difference can be shown as the total population is so small.

In Japan most should be round the coast. This will be the most difficult to manage as the area of lowland is so small and the population so high. The answers to the two questions are the same, viz. Japan. It is sometimes argued that China is the most densely populated country in the world and this is true if only the lowlands are taken into consideration ; but when the whole area of the country and Tibet are included the density is less than that of Japan.

In making the map the teacher should remember to put in the boundaries. Such a paper as this should take about two hours to do and tests both knowledge of facts and the pupil's ability to reason for himself.

## XIII

# GEOGRAPHICAL EXCURSIONS

It is essential that the foundations of geographical knowledge shall be laid in the field. No amount of reading from books can make up for a practical knowledge gained by looking at the earth which the child is studying. It follows that from the very early stages expeditions should form part of the geography course. In the lower school there is usually plenty of time and many simple excursions can be made. At first these will not go beyond the school compound, where miniature land forms such as hills, valleys, rivers and deltas can be pointed out as the new word occurs in the lesson. The teacher should never be afraid to break off a lesson and continue it out of doors if he sees that the class is unable to understand something which could be more easily explained in the field. Children in these lower classes can be taken to a convenient spot in the village to watch the number of carts that pass and to make a list of what they contain. They will then learn the first idea of what transport and markets mean. A list of the different kinds of vehicles, motor buses, motor cars, bicycles, carts, passing in each direction can be kept on another expedition. The class will know where they are likely to be going and the teacher can give an instructive lesson on the local routes and markets, based on the information so obtained. As the children get older they can be taken round the village and taught to construct a map of the fields within a short radius.

They should enter in the map the crop found in each field. If this is done several times in the year they will gain a real working knowledge of the 'land utilization' in their neighbourhood. In towns a visit to the shops to make a list of the things which come from other countries and their place of origin is a most interesting expedition. You may tell a class that Denmark is famous for dairy-farming but they are much more likely to remember the fact if they have seen tins of Danish milk sold in their local shop. All these excursions may be undertaken with quite small children, but if they are to have geographical value the teacher must make careful preparation and follow up the expedition with suitable lessons in the classroom.

The children themselves must know why they are going out and have a very clear idea of what they are to look for. In the very early stages notes need not be kept, for the children can probably only write with difficulty and the teacher will simply take them to a particular spot in the very near neighbourhood of the classroom and point out the things which he wishes the class to see. Later, when children are going to make a survey of the traffic of their village, say, he will need to do more. The first essential is to choose a suitable spot to which to take the class, where they will not be in the way of passers-by and yet will see clearly what he wishes them to see. This involves going himself a day or two before to choose the place. He will then need to divide the class into sections, giving each a special job. One set will look for cars going one way, another will make a note of those going in the opposite direction, a third and fourth will do the same with buses, a fifth and sixth with bicycles, a seventh and eighth with bullock carts, while a ninth and tenth will take note of the contents of the carts as far as they are able to see them. Each child must be provided with a small notebook and pencil and must note down as he sees it pass the number of his particular vehicle. If every child in the class is given a special thing to look for there will be competition between the members as to who can be first in noticing anything of interest and the time will not be wasted. Each group should consist of not more than four or less than three members if possible. There is always a tendency to think of an expedition as a species of holiday, but if the preparation has been thorough and the things to take note of sufficiently numerous, interest in the work in hand soon takes the place of excitement. On the next day a lesson should be given on the material collected by the class.

In the middle school more ambitious expeditions can be undertaken. The children are older and can be taken further afield. A bus can be hired and the class shown some natural feature which has been mentioned in the class, e.g. if coastal erosion has come into a lesson on some part of the world and the class lives near the sea, an expedition to see the effect of the waves and tides on their own coast is indicated. Preparation is even more necessary on the part of the teacher at this stage than it was in the lower classes. He must first see the things he wishes to point out to the class and decide in what order he is going to do it.

He will if possible choose a place where he can show both erosion and deposition, with probably the formation of a delta or sand-bar, even if it is only on a small scale. In a lesson given before they go out he will show pictures of the kind of thing which the class is to see, so that they have some idea what to look for. He will also draw and duplicate maps of the actual piece of coast and river mouth. He can get the 1″ O.S. map and enlarge it if necessary. It is a tremendous help if each member of the class possesses a copy. Again he will divide his class into sections and tell them what to look for on the way, each section being responsible for something different. Everything on the road is of interest to the geographer. If in a town the location of different types of buildings, commercial offices and banks near the harbour, workers' houses near the factories, markets near stations and so on ; if the way lies through country roads the relation between water supply and crops, natural vegetation and soil, natural drainage and tanks can all be noted. If children are told what to look for they are perfectly capable of finding things out for themselves, and the excitement of going out for the day and riding in a bus will be subdued by the interest of the work in hand. A child of this age can make quite good notes if he is well instructed before he leaves the school. It is of course necessary that there should be sufficient teachers to deal with all the questions which an intelligent class will ask, and therefore it is better to take the expedition on a holiday afternoon when the help of a friendly assistant may be obtained, or better still on two afternoons with half the class each time. On the return of the expedition a lesson or, if need be, more than one, must be given to making a record of what was learnt and explaining with the aid of diagrams on the board anything which might have been obscure. If the children keep expedition notebooks into which they can paste the maps they took with them and enter neatly the rough notes made it will form a valuable asset later in life.

Another useful thing to do in the middle school after such an expedition is to allow the class to make a paper-pulp model of the natural feature which was seen. These should be made on wooden bases, as cardboard tends to curl up when the model dries. The paper pulp is easy to prepare and all schools possess large quantities of waste paper which the geography teacher should collect and use as occasion arises. The model can be made quite accurately if the 1″ O.S. map has been used as the basis. The stretch of coastline with its sand-bar, delta or river mouth can be traced on to the wooden base and the pulp put on and modelled either from memory or from a picture taken at the time of the excursion. When the pulp is dry it can be painted in oil paints to resemble the actual country. River gorges, isolated hills, any special feature of river erosion which may occur in the vicinity of the school, and irrigation by canal or tank can all be treated in this way, both as the objective of an expedition and as the basis of a model.

It is generally not advisable to take children of middle school age to see factories or mills. They are too young to understand the machinery used and are only confused ; this type of excursion should be limited to the upper school. Middle school children can appreciate the geography to be learnt by a visit to a harbour or large railway goods yard provided that the same kind of preparation and follow-up work is done as was suggested for the lower school expeditions. The geographical purpose must be firmly kept in mind by all concerned or else the excitement of seeing ships and trains will be too much for the children. The best way to deal with this is to take them twice, the first time letting them see over a ship or ask innumerable questions about the railway engines and so satisfy their natural curiosity at sight of something new and then take them a second time for geographical purposes. Do not call the first a geography expedition.

In the upper school more ambitious excursions can be undertaken and children taken away for several days at a time with the parents' consent. This type of excursion requires a great deal of preparation on the part of the teacher but is most rewarding in its results. India is a vast country, and if different types of geographical features are to be seen it is necessary to travel long distances. With school-children's concessions on the railways and the help of friendly schools who will generally allow you to stay in their buildings it is quite possible to arrange most useful expeditions. If possible the teacher should survey the ground himself, in the previous holiday, perhaps. A good centre must be chosen from which several different types of excursion can be made. Mysore City is such a centre. Salem and Vijayawada are others which have been used with success. Having chosen his centre and found out whether he can get comfortable accommodation there the teacher should then either go himself and make arrangements for local transport or better still get a friend who lives in the centre to do so for him. The few days which the class will have to spend are so precious that the time must be expended to the best advantage and none lost in waiting for buses which do not arrive.

Having chosen his headquarters and made the necessary arrangements for lodging and transport the teacher must next turn his attention to the detailed preparation of his class, and the first business is to get all the relevant maps, not only of the area round the headquarters but those covering the journey as well. The quarter-inch series is often sufficient but the one-inch must be used if anything of special interest is to be seen. Lessons must be devoted to studying the map, and notes should be made in class as to what to look for between stations. It is generally better to travel long distances by train, as more observation can be done than in a bus.

Having dealt as exhaustively as possible with the journey, the class should study in detail the map of the area which is to be visited. Let us suppose that Mysore has been chosen as headquarters. Chamundi Hill is close to the town and makes a good first excursion on the day of arrival. Before leaving the school the class should have made a model of the hill from the contoured one-inch map. The teacher can with advantage increase the scale, draw the significant contours and have this map duplicated. The class can cut out the different layers in plywood with fret-saws, or in cardboard or even paper with scissors. If paper is used ten sheets of each layer should be cut and pasted together. This may sound troublesome, but it is often quicker with a large class than cutting out once in thick cardboard or plywood and it has the distinct advantage of keeping the whole class occupied. When the model has been built up in layers it can be covered in plasticine, which does not shrink much, or in clay, which tends to crack on drying; or a plaster cast may be made. This is the most satisfactory method if a permanent model is desired. If something that will be useful for the time being only is needed the layered model may be covered with a thin layer of paper pulp, taking care to fill in the 'steps', and this can be painted when dry. This type of model will last for some time and on it may be painted the road and any other features of interest. The teacher will, of course, make a note of the things which he wishes to teach on each excursion and will find that difficulties which occur while the class is making the model can often be easily explained on the ground. The most obvious things to note will be the direction and gradient of the road, and the shape of valleys and spurs on the ground and on the map. Something which children find very difficult to learn in the classroom, but which becomes clear as daylight once they have studied the map and the ground together, is the meaning of the terms 'watershed' and 'river basin', for on a large hill such as Chamundi there will be several small basins. The meaning of orientating a map, and using a map to find the position of prominent features, can of course be best taught on the top of a hill which gives a view over a large stretch of country. The teacher should make a note beforehand of the features which he intends to use for this purpose.

One day should be given to the study of Seringapatam and the class should prepare an enlarged map of the place. The teacher again must produce the original and have it duplicated. The class should colour it and paste it into their Excursion Notebook so that when they are on the field they do not have to make notes on a flimsy piece of paper. A good deal of the interest of Seringapatam is historical, and if the History teacher can be persuaded to accompany the expedition, so much the better. The Geography teacher will point out the use of the Cauvery as a means of defence and how the decrease of water in the dry season allowed the enemy to cross and so break down the defences. This makes a good introduction to the next part of the excursion of that day, which should be to the Krishnaraja Sagar Dam.

This is an excellent example of water storage for irrigation and the map should be studied carefully in the classroom. If possible an old map showing the area before it was flooded and one as it is today should be obtained and compared. The teacher will use this opportunity to point out the requirements for the building of a dam—the narrowing of the valley and a good rock foundation. These can be inferred from the map and the class will know what to look for when they see it in the field. The purpose of building a dam at that point on the Cauvery should be explained before the expedition leaves the school, and the class should do some revision of the climate and crops of the Mysore State. Explanation of the actual working of the sluice-gates should be kept until the children see them. The teacher should make a note in his own book that the drowning of the valley's tributary to the main river above the dam will give him an opportunity to explain the formation of rias and estuaries in Nature.

Another expedition should be to the Sivasamudram Falls. Here again the preparation will consist of a study of the map and possibly the making of a model of the falls and the gorge below. The teacher should revise the work on the formation of waterfalls, so that the class can use their imagination to see the gradual creeping upstream of the fall and the formation of the gorge, when they see it. Later in the day the class will be taken to the power-house to see the use which man has made of the force supplied by nature. A talk on hydro-electric power may be given to the class before they leave school and if this is done the teacher will find that this day in the field will be most profitably spent. If children live in the plains it is extremely difficult to visualize such mighty works of nature and man ; they will only be really impressed when they see them with their own eyes.

If all the preparation suggested above has been carried out the teacher will have little trouble when the time for the excursion itself arrives in keeping his class hard at work from morn to night. In the train as many maps as possible should be distributed amongst the class and everyone set to watch for anything of interest out of the window. There will be keen competition to see who notices anything first and the teacher will be kept busy giving explanations and also in pointing out crops, tanks, and changes in the vegetation which do not show in the map, and in trying to get a possible explanation from the class. The same thing should take place all along the roads when on the way to Seringapatam, Krishnaraja Sagar and Sivasamudram. One of the most interesting things to notice is the constant 'crop rhythm', which occurs with the undulations of the road. At the bottom of every dip in the road will be seen wet crops, as the road rises dry crops, on the top of the rise or the low water-parting between two small streams, there will be rough, scrub vegetation, then as the road descends again dry crops and, at the bottom, wet crops once more. This rhythm can be traced for miles along the roads of the plateau. The presence of dykes and sills of harder and generally darker rock can be seen often forming the backbone of small hills, and these indicate the presence of former volcanic intrusions. If time is available a short visit to the Mysore Zoo should be arranged and the relationship between animals and their natural environment studied. This is a particularly good zoo and there are animals from most parts of the world. If this can be included in the programme this one expedition will have studied the physical, human, historical, and economic geography of the local area, and will also have done some revision work on the different climatic belts of the world, as exemplified in the adaptation to environment of the animals of the different countries.

On the return to school all notes should be written up and a record made including maps, models, pictures, notes and specimens collected. This should be kept in the Geography Museum ; and if each year a different expedition is arranged the school will gradually accumulate a most valuable store of informative material.

It may seem on reading this chapter that the teacher has a very large amount of work before him if he is to carry out the suggestions here made. This is true. Some teachers will wonder whether it is worth all the trouble necessary. but not so anyone who has tried them for himself. There is no more rewarding work for the geography teacher. The sight of his subject coming alive to his class as they compare the map with the feature in the field, the description of the textbook with the sight of the vegetation from the train window and the picture shown in class with the actual dam or power plant is worth all the trouble he has taken.

# APPENDIX

## SOME USEFUL BOOKS ON GEOGRAPHY

### TEXTBOOKS

**Junior**

*Geography First Series,* A. B. Archer & Helen G. Thomas (Ginn)

I. Six Children from Far-Away Lands 8s
II. Eight Children from Near and Far 8s 6d
III. Our Own People and Their Work 10s
IV. The Grouping of Peoples—From Desert to City 10s 6d

*Golden Hind Geographies : First Series,* R. Finch & G. Cons (ULP)

I. Ourselves and Other People
II. Village Peoples
III. Britain and the British
IV. Man's Work in the World

*The New World-Wide Geographies : First Series,* J. H. Stembridge (OUP)

I. Seeing the World 6s
II. Peoples and Homes of Other Lands 7s
III. The World We Live In 7s
IV. Exploring the British Isles 7s 6d

*Columbus Regional Geographies,* L. Brooks & R. Finch (ULP)

I. Children of Many Lands 4s
II. Many Things from Many Lands 4s
III. Round the World 4s 9d
IV. The British Isles 5s 6d

*The New Oxford Geographies,* J. H. Stembridge (OUP)

I. (Introductory) Life and Work at Home and Overseas 9s

*Oxford Progressive Geography : Junior Series,* General Editors : J. H. Stembridge & F. C. A. McBain (OUP)

The First Two Years of Geography, *Teachers* 4s
I. Pictures from Africa and the Mediterranean Basin 4s 5d
II. The New Lands : America, Australia and New Zealand 6s
III. The Old Lands : Asia and Europe 6s 5d

*Lands and Life—Human Geographies,* E. C. T. Horniblow (Grant Educational Co.)

I. People and Children of Wonderful Lands

II. Wonderful Travels in Wonderful Lands
III. Our Own Lands
IIIa. Our Food, Clothes and Shelter

*Foundations of Geography,* B. G. Hardingham (Nelson)

I. Round the Globe 8s
II. Over Land and Sea 8s
III. Ourselves and Our Cousins 8s
IIIa. England and Wales 8s

*A First Course in Modern Geography,* E. G. Hodgkison & D. M. Preece (UTP) 9s 6d

*Adventures in Geography,* Books 1 & 4, N. G. Moore (Harrap) 7s each

**Senior**

*People and Homes in Many Lands,* F. G. Moss (Harrap) 11s 6d

*Columbus Regional Geographies,* L. Brooks & R. Finch (ULP)

The Southern Continents 7s
North America and Asia 7s
The British Isles and Europe 9s
The World of To-day 10s

*Fundamental Geography,* Books I-V (ULP)

I. Many People in Many Lands 7s
II. The Earth in the Making 8s
III. Climate, Vegetable and Man 8s 6d
IV. Man's Work and Needs 9s
V. The World 12s 6d

*Geography for To-day,* Editors: L. D. Stamp & L. S. Suggate (Longman)

At Home and Abroad 12s
Home Islands 10s
Asia 12s
North America 12s
North America and Asia 15s
Europe and the British Isles 17s
The World 19s
Europe 11s

*Real Geographies,* J. Fairgrieve & E. Young (Philip)

I. S. America, Australia and New Zealand 6s 3d
II. North America 6s 3d
III. Africa and Southern Europe 6s 3d
IV. Asia 6s 3d

- V. Europe 6s 3d
- VI. The British Isles 6s 9d

*The New World-Wide Geographies : Second Series*, J. H. Stembridge (OUP)

- I. North and South America 13s
- II. Africa, Asia and Australia 13s
- III. Europe and the British Isles 21s
  - Part 1 Europe 13s
  - Part 2 The British Isles 10s

*The New World-Wide Geographies : Senior Series*, J. H. Stembridge (OUP)

- I. Regions and Peoples of the World 12s
- II. Asia and Australia 14s
- III. Part 1. Europe with the British Isles 14s
  - Part 2. North and South America 12s
- IV. Africa 17s

*Lands and Life—Human Geographies*, E. C. T. Horniblow (Grant Educational Co.)

- IV. The Americas
- V. Africa, Asia and Australia
- VI. Europe, including British Isles

*Modern Geography Series*, D. M. Preece, H. R. B. Wood & others (UTP)

- I. Foundations of Geography 14s
- II. British Isles 11s
- III. Europe 11s
- IV. North America 10s
- V. Asia 9s 6d
- VI. Southern Continents 13s
- VII. Australia and New Zealand 11s 6d
- VIII. Africa 13s 6d

*The New Oxford Geographies*, J. H. Stembridge (OUP)

- II. The Southern Continents 12s
- III. North America and Asia 12s
- IV. Part 1 Europe. (*Out of print*)
  - Part 2 The British Isles 9s

*Foundations of Geography*, B. G. Hardingham (Nelson)

- IV. Ourselves and Our Neighbours 8s
- IVa. The British Isles 8s
- V. Boys and Girls of the British World 8s

*Asia and European Russia*, T. Pickles (Dent) 7s 3d
*Europe*, T. Pickles (Dent) 10s

*Elementary Map Reading,* T. Pickles (Dent) 4s 3d
*Intermediate Map Reading,* T. Pickles (Dent) 7s
*Map Reading,* T. Pickles (Dent) 6s
*Physical Geography,* T. Pickles (Dent) 8s
*A Revision Course in Geography,* T. Pickles (Dent) 17s 6d
*North America,* T. Pickles (Dent) 9s
*The Southern Continents,* T. Pickles (Dent)
  I. South and Central America 8s 6d
  II. Africa 8s 6d
  III. Australia, New Zealand and the Pacific Islands 8s 6d

*Man, the World Over* (4 books), C. C. Carter & H. C. Brentnall (Blackwell) 7s 6d each

*A Geography of Commodities,* H. Alnwick (Harrap) 15s

*The World: A General Regional Geography,* J. H. Stembridge (OUP) Rs 12.75

*The World—A General Geography for Schools in Asia,* L. D. Stamp (Orient Longman) Rs 9

*Regional Geographies,* E. O. Robinson (Macmillan)
  Africa 7s 6d
  Australia and New Zealand 7s 3d
  South America 5s
  South and North America 9s

*Colour Geographies,* T. Herdman (Longman)
  Units 1-20 3s 6d each

## REFERENCE BOOKS

### FOR TEACHERS AND OLDER PUPILS

### 1. General

*Groundwork of Modern Geography,* A Wilmore (Bell) 30s

*Foundations of Geography,* D. M. Preece & H. R. B. Wood (UTP) 13s

*Philip's Systematic Geography—World Relations,* M. S. Willis (Philip)

*The Spirit and Purpose of Geography,* S. W. Wooldridge & W. G. East (Hutchinson) 10s 6d

*The Geographic Factor—Its Role in Life and Civilization,* Whitback & Thomas (Appleton)

*Urban Geography,* G. Taylor (Methuen) 55s

*The Geography of Towns,* A. E. Smailes (Hutchinson) 10s 6d

*Ports and Harbours,* Morgan (Hutchinson) 15s

*The Geographer as Scientist: Essays on the Scope and Nature of Geography,* S. W. Wooldridge (Nelson)

*Geography in the Twentieth Century*, Editor: G. Taylor (Methuen) 50s

*Geography can be Fun*, Munro Leaf (Lippincott) $2.95

*Geography: Our Planet, Its Peoples and Resources*, Editor: Gordon Manley (Macdonald) 63s

*Our World from the Air*, E. A. Gutkind, (Chatto & Windus)

*The Wide World: A Geography*, Preston E. James & Nelda Davis (Macmillan, New York)

*The Geography of Life and Death*, L. D. Stamp (Collins) 6s

*Geography of World Affairs*, J. P. Cole (Penguin) 5s

*Source Book for Geography Teaching*, (UNESCO)

*A Dictionary of Geography*, W. G. Moore (Penguin) 5s

*A Dictionary of Geography*, F. J. Monkhouse (Edward Arnold) 50s

*Larousse Encyclopaedia: World Geography* (Paul Hamlyn) 69s 6d

**II (*a*) Physical Geography–General**

*A Background of Physical Geography*, G. P. Kellaway (Macmillan) 18s

*Physical Geography*, P. Lake (CUP) 30s

*The Realm of Nature*, H. R. Hill (Murray)

*The Splendour of the Earth*, M. S. Anderson (Philip) 28s 6d

*World Geography–Physical*, G. H. Dury (Nelson) 11s

*Physical Geography*, H. R. Cain (Longman) 12s

*Principles of Physical Geography*, Arthur Holmes (Nelson) 90s

*Water for the World*, Elizabeth Helfman (Pyramid Books)

*Geology for Beginners*, W. W. Watts (Macmillan) 15s

**II (*b*) Climate**

*The Climates of the Continents*, W. G. Kendrew (OUP)

*Climatology*, A. Austin Miller (Methuen) 35s

*A Short Course in Elementary Meteorology*, W. H. Pick (H.M.S.O.)

*An Introduction to Climate*, G. T. Trewartha (McGraw-Hill) 93s

Memorandum on the Requirements of a Climatological Station (Meteorological Office, Head Stone Drive, Harrow, Middlesex, U.K.)

Rules for Rainfall Observers (The British Rainfall Organization, Head Stone Drive, Harrow, Middlesex, U.K.)

Cloud Forms according to the International Classification (H.M.S.O. London)

*The Weather*, G.H.T. Kimble (Pelican)

*Equatorial Weather*, E. M. Watts (ULP)

*Everyday Meteorology*, A. Austin Miller & M. Parry (Hutchinson) 35s

*Clouds, Rain and Rain-making*, B. J. Mason (CUP) 13s 6d

### II (*c*) Land Forms

*Outline of Physical Geomorphology*, S. W. Wooldridge & R. S. Morgan (Longman)

*An Introduction to Geology*, A. E. Trueman (Allen & Unwin) 16s

*Physical Geography and Geology*, L. D. Stamp (Longman) 15s

*Principles of Physical Geography*, F. J. Monkhouse (ULP) 35s

*A Study Guide in Physical Geography*, F. J. Monkhouse (ULP) 5s

*The Study of the Soil in the Field*, G. R. Clarke (OUP) 42s

*Geology for Beginners*, W. W. Watts (Macmillan) 15s

*Landscape*, C. A. Cotton (CUP)

*Geology of India*, D. N. Wadia (Macmillan) 55s

*Geomorphology*, C. A. Cotton (Whitcombe & Tombs) 32s 6d

*Physical Basis of Geography*, R. N. Dubey (Kitab Mahal, Allahabad)

*Geology*, H. H. Read (OUP) 12s 6d

*The Earth, Man's Heritage*, W. F. Morris & R. W. Brooker (Harrap) 8s 6d

*The Earth's Crust*, L. D. Stamp (Harrap) 10s

### II (*d*) Oceans

*The Ocean*, F. D. Ommanney (OUP) 12s 6d

*The Sea*, C. R. Miller (Nelson) 105s

### III. Plant and Animal Geography

*Plant and Animal Geography*, M. I. Newbigin (Methuen) 18s

*A Junior Plant Geography*, M. E. Hardy (OUP)

*The Geography of Plants*, M. E. Hardy (OUP)

*The Geography of Living Things*, M. S. Anderson (EUP) 10s 6d

### IV. Economic Geography

*An Introduction to Economic Geography*, N. J. G. Pounds (Murray)

*Handbook of Commercial Geography*, G. G. Chisholm, revised by L. D. Stamp (Longman) 110s

*Economic Geography*, W. S. Thatcher (EUP) 15s

*Economic Geography*, J. Macfarlane (Pitman)

*An Intermediate Commercial Geography*, L. D. Stamp (Longman)
  I. Commodities and World Trade 20s
  II. Economic Geography of Leading Countries 50s

*A Geography of Commodities*, H. Alnwick (Harrap) 17s

*A World Wide Business*, R. Finch (ULP)

*Introduction to Commercial Geography*, L. D. Stamp (Longman) 15s

*Minerals and Mineral Deposits*, W. R. Jones & D. Williams (OUP) 12s 6d

*Our Developing World*, L. D. Stamp (Faber) 12s

*World Resources and Industries*, E. W. Zimmerman (Harper) 75s

*Economic Geography*, C. F. Jones & G. G. Darkenwald (Macmillan, New York) $7.95

*Economic and Commercial Geography*, R. N. Dubey (Kitab Mahal, Allahabad) Rs 15

*Essays on Geography and Economic Development*, Editor: N. Ginsberg (Chicago)

*Industrial Activity and Economic Geography*, R. C. Estall & R. O. Buchanan (Hutchinson) 11s 6d

*An Economic Geography of the Commonwealth*, prepared by the Economist Intelligence Unit (Blackie)

*Rural Settlement and Land Use*, Michael Chisholm (Hutchinson) 10s 6d

## V. Human Geography

*Introduction to Human Geography*, J. H. G. Lebon (Hutchinson) 13s

*Introduction to Human Geography*, D. C. Money (UTP) 20s

*Principles of Human Geography*, P. V. de la Blache (Constable) 40s

*Man and His Work*, A. H. Herbertson (Black) 12s 6d

*Earth and Man*, D. H. Davis (Collier-Macmillan) 63s

*Environment, Race and Migration*, Griffith Taylor (Toronto U.P.) 41s 6d

*Habitat, Economy and Society*, C. D. Forde (Methuen) 22s 6d

*The Tropical World*, Pierre Gourou (Longman) 35s

*Human and Economic Geography*, H. R. Cain (Longman) 15s

*World Geography: Human*, L. S. Suggate (Nelson) 18s

## VI. Political Geography

*Geography and World Power*, J. Fairgrieve (ULP)

*History of Ancient Geography*, J. O. Thomson (CUP)

*Geography and World Affairs*, S. B. Jones & M. F. Murphy (Rand McNally) $6

*Geography of World Affairs*, J. P. Cole (Penguin) 5s

*Asia Handbook*, Editor: G. Wint (Penguin) 16s

*An Atlas of Middle Eastern Affairs*, N. J. G. Pounds & R. C. Kingsbury (Methuen) 8s 6d

*An Atlas of World Affairs*, Andrew Boyd (Methuen) 15s

*An Atlas of African Affairs*, Andrew Boyd & Patrick Van Rensburg (Methuen) 8s 6d

### VII. Exploration and Travel

*Exploration and Discovery*, Wood (Hutchinson)

*Modern Exploration*, F. Kingdom-Ward (Cape)

*Great Explorers*, Norman Wymer (OUP)

*With Fuchs and Hillary Across Antarctica*, Gerald Bowman (Muller)

*With Amundsen at the North Pole*, Gerald Bowman (Muller) 12s 6d

*The Race for the North Pole*, J. E. Weems (Heinemann)

## Statistical References

*Statesman's Year Book*, (Macmillan) 63s

*India, A Reference Annual*, (Ministry of Information and Broadcasting)

*The Times of India Directory and Year Book, including Who's Who*, (Times of India Press, Bombay) Rs 60

*Statistical Abstract–India* (GOI, Central Statistical Organization) Annual

*Whitaker's Almanack* (Whitaker) Annual 30s

*Hindustan Year Book and Who's Who*, Editor : S. C. Sarkar (Calcutta)

*U.N. Statistical Year Book* (Department of Economic and Social Affairs)

## Regional Geography — References

### A. The World

*An Intermediate Commercial Geography*, L. D. Stamp (Longman)

I. Commodities and World Trade 20s

II. Economic Geography of Leading Countries 50s

*The World–A General Geography for Schools in Asia*, L. D. Stamp (Orient Longman) Rs 9

*The World*, T. Pickles (Dent) 13s 6d

*World Geography*, E. O. Robinson (Macmillan)

*India, World and Empire*, H. Pickles (OUP)

*The World : A General Regional Geography*, J. H. Stembridge (OUP) Rs 12.75

*Essentials of World Geography*, J. F. Unstead & E. G. R. Taylor (Philip) 7s 6d

*A World Survey*, J. F. Unstead (ULP) 35s

*A Systematic Geography of World Relations*, M. S. Willis (Philip)

*The Groundwork of Modern Geography*, A. Wilmore (Bell) 30s

**B. India** (T-Textbook, R-Reader, RB-Reference Book)

*Our India–1953* (T), Minoo Masani (OUP) Rs 3.50

*A First Geography of India and Pakistan* (T), E. C. Stamp (Longman) Re 1.60

*Economic Geography of India* (RB), R. N. Dubey (Kitab Mahal, Allahabad) Rs 12.50

*Imperial Gazetteer of India* (RB), (OUP) 17s 6d

*The Economic Development of India* (RB), V. Anstey (Longman)

*Bengal in Maps* (RB), S. P. Chatterjee (Longman)

*Economic Geography of India*, Vol. III (RB), H. L. Chibber (Nandkishore, Banaras)

*Handbook to India, Pakistan, Burma and Ceylon* (RB), (Murray)

*An Historical Atlas of the Indian Peninsula* (RB), C. C. Davies (OUP) Rs 4

*Modern Geography and its Meaning for India*, O. H. K. Spate in the *National Geographical Journal of India*, Banaras, Vol. 2, part IV, December 1954

*The Gazetteer of India*, Vols. I & II (Ministry of Information and Broadcasting 1965) Rs 22.50 each

*India and Pakistan*, O. H. K. Spate & A. T. A. Learmonth (Methuen) 126s

*India and Pakistan*, H. R. Tinker (Pall Mall) 35s

*Economic Geography of India*, A. Dasgupta (A. Mukherjee & Co., Calcutta) Rs 10

**C. Asia**

*A Regional Geography of Ceylon* (RB), S. F. De Silva (Colombo Apothecaries).

*The Far East–A Social Geography*, A. D. C. Peterson (Duckworth) 25s

*Asia : A Regional Economic Geography*, L. D. Stamp (Methuen) 75s

*Asia : A Regional Geography IV*, L. D. Stamp (Longman)

*The Eastern Lands*, A. T. A. & A. M. Learmonth (OUP) 15s

*The Changing Map of Asia*, Editor : W. G. East & O. H. K. Spate (Methuen) 55s

*The Pacific Basin*, G. L. Wood & P. R. McBride (OUP) 25s

*China–Her Life and People*, F. L. French & E. M. Cable (ULP)

*South East Asia*, E. H. G. Dobby (ULP) 35s

*The Middle East, A Political and Economic Survey*, (RIIA-OUP)

*Asia*, R. R. Rawson & W. G. East (Nelson) 15s

*The Pattern of Asia*, Editor : N. Ginsberg (Prentice-Hall)

*Malaya, Indonesia, Borneo and the Philippines*, C. Robequain (Longman) 60s

### D. Africa

*Africa,* L. S. Suggate (Harrap) 18s 6d

*Africa,* D. A. Sherriff (OUP) 15s

*Africa : A Social, Economic and Political Geography,* W. Fitzgerald (Methuen) 63s

*Studies and Exercises in Human Geography,* D. C. Money (UTP)

I. Africa 6s

*An Economic Geography of East Africa,* A. M. O'Connor (Bell) 35s

*Southern Africa : A Geographical Study,* J. H. Wellington (CUP)

I.

II. 55s

*The Nile,* Hurst (Constable)

*Africa,* R. Miller (Nelson) 15s

*Africa : A Geographical Study,* Alan Mountjoy & Clifford Embleton (Hutchinson) 30s

*An Outline Geography of Africa,* H. R. Jarret (Methuen) 15s

*West Africa,* R. J. Harrison Church (Longman) 65s

### E. Europe

*Europe,* M. R. Shackleton (Longman) 45s

*Europe,* J. F. Unstead (ULP) 27s 6d

*Western Europe,* E. D. Laborde (ULP) 21s

*Southern Europe,* M. I. Newbigin (Methuen)

*Europe and the Mediterranean,* L. D. Stamp (Longman)

*The Mediterranean,* A Siegfried, trans. D. Hemming (Cape) 16s

*The British Isles,* L. D. Stamp & S. H. Beaver (Longman) 80s

*The British Isles,* J. F. Unstead (ULP) 22s 6d

*The British Isles,* T. Pickles (Dent) 8s

*France,* Hilda Ormsby (Methuen) 55s

*Europe,* Roger Cole (Nelson) 18s

*Europe and the British Isles,* J. H. Stembridge (OUP) 21s

I. Europe 13s

II. The British Isles 10s

*A Geography of Europe,* Jean Gottman (Holt, Rinehart & Winston) 88s

*A Geography of Europe, including the Asiatic U.S.S.R.,* Editor : G. W. Hoffman (Methuen)

*Regional Geography of Western Europe,* F. J. Monkhouse (Longman) 75s

*A Regional Geography of Western and Central Europe,* E. W. Shanahan (Macmillan) 35s

*Central Europe*, A. F. A. Mutton (Longman) 70s
*The Soviet Union*, G. Jorre (Longman) 60s
*Geography of the U.S.S.R.*, Theodore Shabad (Columbia) $12
*The Scandinavian World*, A. C. O'Dell (Longman) 70s
*Great Britain and Ireland*, H. R. Cain & R. J. Small (Longman) 12s

**F. North and South America**

*North America*, L. R. Jones & P. W. Bryan (Methuen) 55s
*North America*, E. G. Ashton (Harrap)
*The Americas*, L. D. Stamp (Longman) 20s 6d
*South America*, E. W. Shanahan (Methuen) 30s
*South America*, E. G. Ashton (Harrap)
*South America*, George Pendle (OUP)
*North America*, F. J. Monkhouse & H. R. Cain (Longman) 18s
*North America*, G. H. Dury & T. J. Chandler (Nelson) 11s 6d

**G. Australia**

*Australia*, G. Taylor (Methuen) 50s
*Australia and New Zealand*, L. D. Stamp & L. S. Suggate (Longman) 13s
*Australia, New Zealand and the Pacific*, O. H. K. Spate (OUP) 15s
*Australia, New Zealand and the Pacific Isles*, Editor: E. D. Laborde (Heinemann)

## Practical Geography

**I. General**

*Practical Geography*, G. H. Gopsill & B. A. Beesley (Macmillan)
*How to Look at Geographical Pictures*, W. J. H. & H. S. L. Watkins (Macmillan) Series I & II 7s 6d each
*The Geographical Room in a Secondary School*, R. R. Heaton (British Geographical Association)
*Practical Work in Geography*, J. Garnier (Edward Arnold)

**II. Map Work**

*Map Reading Made Easy*, C. C. Esson & G. S. Philip (Philip)
*Map Projections*, G. P. Kellaway (Methuen) 11s
*An Introduction to Mapwork and Practical Geography*, J. Bygott (UTP) 20s
*Map Reading*, T. Pickles (Dent) 6s
*An Introduction to the Study of Map Projections*, J. A. Steers (UTP) 27s 6d
*Maps—Their History, Characteristics and Uses*, Fordham (CUP)

*Maps, Topographical and Statistical,* T. W. Birch (OUP) 30s
*General Cartography,* Erwin Raisz (McGraw-Hill) 100s 6d
*Maps,* A. D'Agapeyeff & E. C. Hadfield (OUP)
*A Contour Dictionary,* J. B. Goodson & J. A. Morris (Harrap) 8s 6d
*Introduction to Map-Projections,* J. A. Steers (ULP) 27s 6d
*Map Reading for Schools,* A. Ferriday (Macmillan) 7s
*Contour Book,* J. Fairgrieve & E. Young (Philip) 2s
*Junior Contour Book,* J. Fairgrieve & E. Young (Philip) 2s
*Contours,* C. Boxhall & E. J. Devereux (Philip) 4s
*Sketch-Map Geography,* J. H. Walker (Edward Arnold) 10s
*Junior and Senior Practical Geography,* E. J. Orford (ULP)
*Essentials of Map-Reading,* A. G. F. Elwood (Harrap) 3s 6d
*Map-Reading for Schools,* Margaret Wood (Harrap) 11s 6d
*Elementary Mapwork,* A. W. Coysh & D. M. Hunt (UTP) 3s 6d
*Map Reading,* F. F. Crossley (Macmillan) 5s
*Maps and Diagrams,* F. J. Monkhouse & H. R. Wilkinson (Methuen) 26s
*Map Making,* Frank Debenham (Blackie) 21s
*Elementary Map Interpretation,* J. H. Jennings (CUP) 9s
*Elements of Cartography,* Arthur H. Robinson (Wiley) $8.75

### III. Field Work

*Geography In and Out of School,* E. H. W. Briault & D. W. Shave (Harrap) 12s 6d
*The Purpose and Organization of Field Studies,* Editor: M. S. Dilke (Evans Bros.) 12s 6d

### Atlases

*The Survey of India School Atlas,* Allied Publishers Rs 5
*The Oxford Atlas,* C. Lewis & J. D. Campbell (OUP) 50s
*The Concise Oxford Atlas,* D. P. Bickmore & K. F. Cook (OUP) 45s
*Harrap's 3-D Junior Atlas,* F. Debenham (Harrap) 8s 6d
*The Oxford Economic Atlas of the World,* (OUP) 70s
*The Oxford Economic Atlas for India and Ceylon,* J. Bartholomew (OUP)
*The Oxford School Atlas for India, Burma & Ceylon,* J. Bartholomew (OUP) Rs 5.50
*The Imperial Gazetteer of India,* J. Bartholomew (OUP) 17s 6d
*Atlas of South-East Asia,* D. G. E. Hall (Macmillan) 50s
*Atlas of Post War Problems,* (Penguin)

## Geographical Journals and Magazines

*The Geographical Journal*, (Royal Geographical Society, Kensington Gore, London, S.W.7)

*Geography*, (Geographical Association, Municipal High School of Commerce, Manchester)

*Geographical Magazine*, (The Geographical Magazine, 40-42 William IV Street, London, W.C.2)

*The National Geographic Magazine*, (The National Geographic Society, Washington, U.S.A.)

*Pictorial Education*, (Evans Brothers)

*Geographical Review of India*, (Geographical Society of India, Department of Geography, University of Calcutta) Rs 15 annually

*Journal of Geography*, (A. J. Nystrom & Co., for the National Council of Geography Teachers, Elston Avenue, Chicago)

*Indian Geographical Journal*, (Indian Geographical Society, University Examination Hall, Madras 5) Rs 8

*National Geographical Journal of India*, (National Geographical Society of India, Banaras Hindu University, Banaras) Rs 8

*Himalayan Journal*, (OUP) Rs 14

*Illustrated Weekly of India*, (Times of India Press, Bombay)

Census Reports for each district, (Government of India)

## Readers and Library Books

*The Story of Mankind*, Hendrik Van Loon (Harrap) 21s

*Things Seen Series*, (Seeley Service)

*Other People's Houses*, R. K. & M. I. R. Polkinghorne (Harrap)

*What the World Wears*, R. K. & M. I. R. Polkinghorne (Harrap) 13s 6d

*Colour Geographies Series*, T. Herdman (Longman) 4s each

Coasts of Britain ; Farms of Britain ; Towns of Britain ; Industry in Britain ; London ; Forest and Savannah : West Africa ; Mining in Southern Africa ; Ricefields in India ; Great Plain of China ; Island Harvests : The Far East ; Grasslands of the Southern Continents ; Atlantic to the Great Lakes ; The Prairies ; North American Cities ; West Indies and Gulf Coasts ; Lands in the Desert : The Middle East ; Mediterranean Lands ; Contrasts in Russia ; Rivers of Europe ; Industrial Neighbours.

*People of the World Series*, (OUP) 2s 6d each

Series I : Fur Hunting and Fur Farming ; Lumbering in Canada ; An Australian Cattle Station ; A New Zealand Sheep Station ; A Tea Plantation in Ceylon ; Fruit and Wine Farming in South Africa

Series II : A Visit to Zululand ; The Bushmen of South Africa ;

The Maoris of New Zealand ; The Sherpas of Nepal ; Australian Aborigines ; An Indian Village in the Deccan

Series III : Farming on the Canadian Prairies ; A Sugar Plantation in Jamaica ; The Masai of East Africa ; The Cattle People of Nigeria ; The Hill People of North-East India ; The Coconut Lands of Southern India

Series IV : A Banana Plantation in Guatemala ; A Japanese Village ; A Coffee Plantation in Brazil ; A Rubber Plantation in Malaya ; Peoples of the Desert ; A Turkish Village

*Animals of the World Series,* (OUP) 2s 6d each

Series I : Elephants ; Camels ; Polar Bears ; Chimpanzees

Series II : Kangaroos ; Reindeer ; Beavers ; Whales

### Geographical Exercise Books

*Exercises in Contour Maps,* R. C. Dutt (Saraswati Press, Allahabad)

*Elementary Exercises in Map-work,* V. C. Spary (ULP) 2s

*Senior Exercises in Mapping and Map Reading,* V. C. Spary (ULP) 2s 6d

*Map Book of Europe for Senior Forms,* A. Ferriday (Macmillan) 5s

*Elementary Map Making and Map Reading,* C. Midgley & C. E. Clowser (Wheaton)

*Intermediate Map Making and Map Reading,* C. Midgley & C. E. Clowser (Wheaton)

*More Advanced Map Making and Map Reading,* C. Midgley & C. E. Clowser (Wheaton)

*Exercises in Modern Geography,* A. W. Coysh & D. M. Hunt (UTP)

*Elementary Mapwork,* A. W. Coysh & D. M. Hunt (UTP) 3s 6d

*The Oxford Geographical Note-Books for Secondary Schools Series,* J. H. Stembridge (OUP) From 2s 10d to 5s

*Map Reading for Schools,* A. Ferriday (Macmillan) 7s

*A Map Book of Asia for Middle and Senior Forms,* A. Ferriday (Macmillan) 7s 6d

### Local Studies

*The Study of Local Geography,* C. A. Simpson (Methuen)

*Home Geography,* Ridgeley (McKnight & McKnight, Illinois, U.S.A.)

### Principles of Teaching

*Handbook of Suggestions on the Teaching of Geography,* (UNESCO)

*Fundamentals in School Geography,* O. Garnett (Harrap) 15s

*Suggestions for the Teaching of Geography,* (Geographical Association, Manchester)

*Handbook of Suggestions for Teaching,* (H.M.S.O. London)

*Handbook for Geography Teachers,* Editor: G. J. Cons (Methuen) 22s 6d

*The Junior Geography Lesson,* E. J. Barker (OUP) 10s 6d

*Instruction in Indian Secondary Schools,* E. A. Macnee (OUP) Rs 10

*Evaluation in Secondary Schools,* Ch. viii. Geography (All India Council for Secondary Education, New Delhi)

*Measurement in Today's Schools,* C. G. Ross, revised by J. C. Stanley (Prentice-Hall)

*Geography in Relation to Social Sciences,* Isaiah Bowman (Charles Scribner)

*Beginning Geography in Africa and Elsewhere,* V. L. Griffiths & A. R. A. Taha (Evans Bros) 7s 6d

*Principles of Human Geography,* E. Huntington & E. B. Shaw (John Wiley) $8.95

*The Study of Geography,* J. M. Mogey (OUP)

*The Teaching of Geography in Secondary Schools,* Incorporated Association of Assistant Masters (CUP) 45s

*A Handbook for Geography Teachers,* R. C. Honeybone & M. Long (Methuen)

*Teaching Geography,* M. Long & B. S. Roberson (Heinemann) 45s

*Geography In and Out of School,* E. W. H. Briault & D. W. Shave (Harrap) 12s 6d

*The Teaching of Geography,* G. H. Gopsill (Macmillan) 30s

*The Use of Instructional Material,* Amo De Bernardis (Appleton)

*Handbook of Social Studies,* Joan Dray & David Jordan (Methuen) 18s

*Social Studies for Children in a Democracy,* John U. Michaelis (Prentice-Hall) $7.95

## Equipment

### WALL MAPS

**Large Wall Maps**

*Physical–Political Colouring,* (W. & A. K. Johnson) 38s 6d each
Size: 52″ × 38″
Africa, Asia, Europe, North America, Australia, South America, British Isles, World in Hemispheres, World (Mercator's Projection), World (Gall's Projection), and others

*Philip's Regional Wall Maps: Physical–Political Maps,* (Philip)
Size: 37½″ × 48″

*Philip's Comparative Wall Atlases,* 8 maps for each set mounted on cloth on one roller
Size: 33″ × 43″

Density and Population; Summer climate; Winter climate; Natural vegetation; Actual temperature—July; Actual temperature—January; Relief; Political and Communications; Commercial development

The following sets are available: World, United States, Europe, Asia, Africa, North America, South America, Australia and New Zealand, British Isles

*Oxford Plastic Relief Maps,* (OUP)

These are models, supplied rolled in boxes. No political boundaries are shown. They may be marked with coloured pencil, which can be easily erased. Prices on application.

### MAPS AND GLOBES IN ENGLISH AND INDIAN LANGUAGES

Wall maps, relief model maps, charts and globes are available from Chandy Charan Dass & Co., 150 Dharamtala Street, Calcutta 13.

### GLOBES

Particulars may be obtained from Messrs MacMillan & Co. Ltd, Orient Longman Ltd, The Basel Mission Book Depot, Mangalore and Adair Dutt & Co. (India) Pvt. Ltd

### PICTURES

Sets of pictures are obtainable from many publishers on application.

### PROJECTORS

Particulars may be obtained from Messrs AMA Ltd, Adair Dutt & Co. (India) Pvt. Ltd, Lawrence & Mayo Ltd, Kodak Ltd, and the Scientific Supplies Co. Ltd.

### LANTERN SLIDES, FILMS AND FILM STRIPS

Lantern slides are obtainable from Messrs Relf Bros, Ltd, 8 Baldwin's Gardens, London, E.C.1, or Messrs Newton & Co., 37 King Street, London W.C.2.

Films and film strips may be hired or borrowed from Messrs AMA Ltd, Kodak Ltd, British Information Services or United States Information Services.

For catalogues and other up-to-date information application may be made to the following manufacturers and publishers of film strips: The Educational Supply Association, 233 Shaftesbury Avenue, London W.C.2 (sole agents for 'Common Ground' film strips).

Educational Productions Ltd, 17 Denbigh Street, London S.W.1.

Hulton Educational Publications Ltd, 55 Saffron Hill, London E.C.1.

Visual Publications Ltd, 197 Kensington High Street, London W.8.

### SURVEY AND METEOROLOGICAL EQUIPMENT

Obtainable from Messrs Lawrence & Mayo Ltd, Adair Dutt & Co. (India) Pvt. Ltd.

### SPECIMENS, MODELS, ETC.

Geological specimens and models obtainable from Thomas Murby & Co. Ltd, or the Basel Mission Book Depot, Mangalore; museum specimens of animal life from the Fisheries Department, Ennore, Madras; and clay models of animals and fruits from the Basel Mission Book Depot, Mangalore.

# INDEX

air, fundamental law of movement of, 7
— principle of, in connexion with moisture, 9, 10
altitude, 6, 9-10
animals, 21-22, 25, 42, 95
apparatus, 4, 5, 72-9
assignments for individual work, 80-122
astronomy and geography, 4
atlases, 58, 60
axis, inclination of earth's, 4, 23

Baker, J. N. L., 47
Barker, W. H., *Geography in Education and Citizenship*, 1
Barker, W. H., and Brooks, L., *Regions of the World*, 42
barometer, 5, 79
Bartholomew, J., *Oxford School Atlas*, 60, 85
biology and geography, 4, 16-22, 23
blackboard, 5, 72
— instruments, 56, 59, 72, 73
— outlines, 59, 74
— summaries, 80, 125-130
botany and geography, 16
Brooks, L. and Barker, W. H. *Regions of the World*, 42

civilization, 17, 37
climate and animals, 42
— — crops, 5, 18-21, 24, 32, 53-5, 70
— — human life, 5
— — natural regions, 42-50
— — statistics, 11, 12, 13, 52, 53
— — vegetation, 5, 16
climate, chief factors of, 5
— definition of, 5
— equable and extreme, 12
— maps, 63, 66
— observations on, in the junior school, 5
climate of the home region, 5, 6
— of the world, 6
— teaching of, 6-13
— types of, in India, 13, 17
comparison, as a method of teaching, 51-7, 123

Dalton Plan, 80, 81
definition of geography, 1, 2, 40
desiccation of land, 22, 104
diagrams, 7, 8, 9, 10, 56, 64, 68, 73, 91
duplicating devices, 62, 74

environment, adaptation to, 16, 22, 167
— and man, 1, 2, 17, 23-4, 40-41
— and natural resources, 23
— geographical, 24
— of animals, 22, 167
— physical, 1, 2, 41
— study of, 3
epidiascope, 74, 76, 78
examinations, 147-56
exercises, 7, 12, 61, 62, 63, 69-70, 82-122, 148, 150-56
expeditions, for lower school, 157-9
— — middle school, 159-62
— — upper school, 162-7

Fairgrieve, J., *Geography in School*, 2
Ferrel's Law, 9
field work, 13, 52, 157-67
folding mountains, demonstration of, 14
function of geography, 2, 3

geography and astronomy, 4
— — biology, 4, 16-22, 23
— — botany, 16
geography and geology, 4, 13-15

— — meteorology, 4, 5-13
— — oceanography, 4, 15
— — outdoor work, 13-14
— — travel, 3
— — zoology, 21
— apparatus, 4, 5, 72-9
— definition of, 1, 2, 40
— museum, 167
— physical, 13-14
— regional, 40-50
— room, 72-9
— teaching, function of, 2, 3
— — logical order of, 38, 123
geographical conditions and crops, 5, 18-21, 24, 30-32, 53-5, 70
— factors and plant growth, 18
— — governing position of towns, 24-34
— — — human activities, 32-8, 41
— — — settlement, 24-37
geology, 13
geology and outdoor work, 13-14
geological topics and school geography, 13

heights, how to indicate on maps, 60, 64-5
Herbertson, A. J., *Senior Geography*, 43
home region, 51, 52
homework, 61, 81, 82
human geography, 23-39, 41, 124

inclination of the earth's axis, 4, 23
*India—A Reference Annual*, 13
India, Survey map of, 58
individual work, 61, 80-7
insects, influence of, on man, 21

jute, 19, 33

Kendrew, W. G., *The Climates of the Continents*, 13

latitude, 4, 5, 52
learning from pictures, 88-122
lesson notes on
— — — individual work, 82-122
— — — Khirgiz Steppes, 138-41
— — — Prairies of N. America, 141-3
— — — Rhone Valley, 132-8
— — — South-East Asia, 125-32
longitude, 4, 5, 52

map cupboard, 74
— — outline of continents, 59, 61
— projections, 70-71
map-making course, lower school, 63, 65, 69
— — middle school, 63, 65-70
— — upper school, 62, 63, 69-71
maps, duplicating, 62, 75
— key of, 60, 61, 65, 66
— showing distribution, 63-5, 66-9
— showing heights, 60, 64-5
— — positions of towns, 24-36
maximum and minimum thermometer, 79
Meteorological Department, 79
meteorology and geography, 4, 5-13
minerals, 14, 30-34
movements of the earth, 4

natural regions, 40-50, 59
— — boundaries of, 41
— — definition of, 40
— — factors which decide, 42
— — major and minor, 41-2
— — of Asia, 44
— — of Assam, 49
— — of Canada, 45
— — of Ceylon, 41
— — of China, 45-7
— — of India, 47-9
— — of North America, 44
— — of Pakistan, 47-9
— — of Scotland, 41
— — of the World, 42, 43-4

observatory, 78-9
oceanography, 4, 15
oceans, 15
oral teaching, 80, 81, 82, 123, 143

*Pakistan*, year book, 13

pictures, learning from, 88-122
— lessons, notes on, 88-122
pressure, 5, 7

questions, examples of test, 144-56

railways, 24-37
rainfall, 5, 9, 10, 11, 12, 16, 18-20, 24, 52
— annual, 63
— cause of, 9-11
— charts, 5
— connexion with wind, 9-11
— convectional, 11
— effect of mountain ranges, 9-11, 23
rain-gauge, 5, 52, 78
regional geography, 14, 40-50
— — — minerals, 14
— — and geology, 14
relief, effect on natural regions, 42
revolution of the earth, 4, 23

Scudder, H. T., *Living and Earning a Living*, 85
sea, 6, 15, 61
seasons, a lesson on, 4-5
soils, 14
southern continents, comparison of, 54-5
Stamp, L. D., 44
— — *The World*, 82-3, 127, 129, 130
*Statistical Abstract, India*, 66
Stembridge, J. H., *Australia, New Zealand and the Pacific Islands*, 146

tea, 19
teaching geography by comparison, 53-7, 123
— — — logical order of topics, 38, 123
temperature, 5, 6, 10-12, 24
tests, 144-56
thermometer, 5, 10, 52
— maximum and minimum, 79
— wet and dry bulb, 79
towns, maps showing position of, 25-8, 30, 31, 33, 35, 36

vegetation, 16-18, 22, 25, 32, 53-5, 70

wall maps, 58
weather, 5
— maps, 79
— report, 79
wet and dry bulb thermometer, 79
wheat, 19
wind vane, 79
winds, 5, 7, 9, 10
— connexion with pressure, 7

zoology and geography, 21

## The First Two Years of Geography

F. C. A. MCBAIN

A book which provides teachers with material for the introductory two years' work. *Oxford Progressive Geography: Junior Series 5s*

## Fundamentals in School Geography

*A Book for Teachers and Students in Training Colleges*

OLIVE GARNETT

Although concerned largely with the work of preparatory and junior schools, much of what the book contains applies also to geography for older children. It does not attempt to give an exhaustive treatise on the methodology of geography. Its purpose is to help the young teacher in dealing with problems that frequently arise. *Harrap Third edition 15s*

'It is a classic on geography method. It is a mine of information, magnificently written.' *Geography*

## Geography In and Out of School

*Suggestions for the Teaching of Geography in Secondary Schools*

E. W. H. BRIAULT and D. W. SHAVE

This book makes useful suggestions which the thoughtful teacher will be able to modify, expand and adapt to suit his own needs. *Harrap 12s 6d*

---

**Rs 5**

SBN 19 560186 6